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A first faunistic account on the *Onthophagus* Latreille, 1802 (Coleoptera, Scarabaeidae, Scarabaeinae) of the Nadia district, West Bengal, with a preliminary checklist from India

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Abstract

A survey of the dung beetle fauna from the Nadia district of West Bengal, India resulted in the recognition of 22 species belonging to *Onthophagus* Latreille, 1802. All these are new reported for the district. Twelve species are also newly recorded for the West Bengal state: *Onthophagus* (*Onthophagus*) *andrewesi* Arrow, 1931; *O.* (*O.*) *ceylonicus* Harold, 1859; *O.* (*Onthophagiellus*) *crassicollis* Boucomont, 1913; *O.* (*Colobonthophagus*) *hindu* Arrow, 1931; *O.* (*O.*) *mauritii* Boucomont, 1919; *O.* (*Colobonthophagus*) *paliceps* Arrow, 1931; *O.* (*Colobonthophagus*) *pardalis* (Fabricius, 1798); *O.* (*O.*) *porcus* Arrow, 1931; *O.* (*Eremonthophagus*) *semicinctus* d'Orbigny, 1897; *O.* (*O.*) *socialis* Arrow, 1931; *O.* (*Indonthophagus*) *turbatus* Walker, 1858; and *O.* (*O.*) *zebra* Arrow, 1931. All the recorded taxa are provided with distribution, material examined, diagnostic characters, and remarks. A preliminary checklist of the genus from India based on available literature and physical examination of specimens is also provided.

Keywords

Distribution, dung beetles, faunistic, identification, Onthophagini, Oriental region.

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Introduction

The genus *Onthophagus* Latreille, 1802 is a hyperdiverse and predominant genus within the tribe Onthophagini of the subfamily Scarabaeinae. The subfamily shows a worldwide distribution and currently includes 227 genera and 12 tribes (Chandra and Gupta 2012a), of which the Onthophagini is composed of 35 genera and represents about half of the described species in the entire subfamily (Cambefort 1991; Davis et al. 2002; Smith 2006; Philips 2011). The genus *Onthophagus* comprises about 3,065 described species-group taxa worldwide: 2,769 living species, 287 infraspecific taxa, and nine extinct species (Schoolmeesters 2019). According to most recent studies, the genus is composed of 30 subgenera (Tarasov and Kabakov 2010; Tarasov and Solodovnikov 2011; Philips 2016).

Beetles belonging to *Onthophagus,* as well as the other dung beetle genera, are key elements of many ecosystems. By consuming and burying dung, they enhance soil nutrient content, influence soil biota, and increase plant productivity by actively participating in bioturbation (Yokoyama et al. 1991; Mittal 1993; Nichols et al. 2008). Besides, they are also known to augment plant growth, perform secondary seed dispersal, suppress

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abundance of dung-breeding nematodes and protozoan parasites, and play significant ecological role in trophic regulation and pollination (Nichols et al. 2008). Furthermore, the great morphological variety exhibited by *Onthophagus* beetles (e.g., cephalic and pronotal horns) is very important in evolutionary and developmental biology studies (Moczek 2011; Tarasov and Génier 2015).

The first comprehensive account of *Onthophagus* beetles from the Oriental region was presented by Arrow (1931). Later monographic works from the Oriental and Palaearctic regions were published by Balthasar (1963) and Löbl and Löbl (2016).

Information on the occurrence of these beetles from India is chiefly based on the following works: Boucomont (1921), Arrow (1931,1933), Oppenheimer (1977), Biswas (1978, 1979), Biswas and Chatterjee (1985, 1986a, 1986b, 1991), Sewak (1985, 1986, 1991, 2004a, 2004b, 2006, 2009a, 2009b, 2010), Scheuren (1995, 1996), Biswas et al. (1999), Chatterjee and Biswas (2000), Saha and Raychaudhuri (2000), Chandra (2000, 2002, 2005, 2009), Chandra and Singh (2004, 2010), Chandra and Ahirwar (2005a, 2005b, 2007), Schoolmeesters and Thomas (2006), Sarkar et al. (2010, 2015), Chandra et al. (2011, 2012a, 2012b, 2012c), Chandra and Gupta (2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2012e, 2013), Thomas et al. (2011), Jadhav and Sharma (2012), Nithya and Thomas (2012), Anitha Rani and Sanjayan (2013), Karimbumkara and Priyadarsanan (2013, 2016), Bharamal et al. (2014), Gupta et al. (2014), Sathiandran et al.(2015), Gaikwad and Bhawane (2016), Gajendra and Prasad (2016), Singh et al.(2017), Anto and Vinod (2017), and Kalawate (2018).

However, the Scarabaeidae fauna, and specifically Scarabaeinae dung beetles, have never been surveyed in the Nadia district of West Bengal, India. To date, there are no publications on the occurrence of these scarabs from the region. This was the main reason that prompted us to document the scarabaeid fauna of the Nadia district of West Bengal state of India. In this paper, we provide preliminary results on the *Onthophagus* species that occur in the Nadia district.

Also, we compiled a preliminary checklist of the *Onthophagus* species known from India using distributional records reported in the literature and direct examination of specimens kept at the Zoological Survey of India (ZSI) (Appendix, Table A1).

Methods

Study site. Nadia district is located in the West Bengal state of India. The state has 4,064 km^2 of forests under protected area network, which correspond to 34% of the state's total forested area and 4.54% of its total geographic area. The proportion of agricultural landscape is the highest among the Indian states. West Bengal is divided into 23 districts, and the Nadia district, occupying an area of 3,927 km^2 is subdivided into 17 administrative blocks. It is situated at elevations of 7–17 m above mean sea level and is located between 22°54′02″ and 24°05′55″N and between 088°07′52″ and 088°47′35″E (Fig. 1). The district lies in the alluvial plains of the river

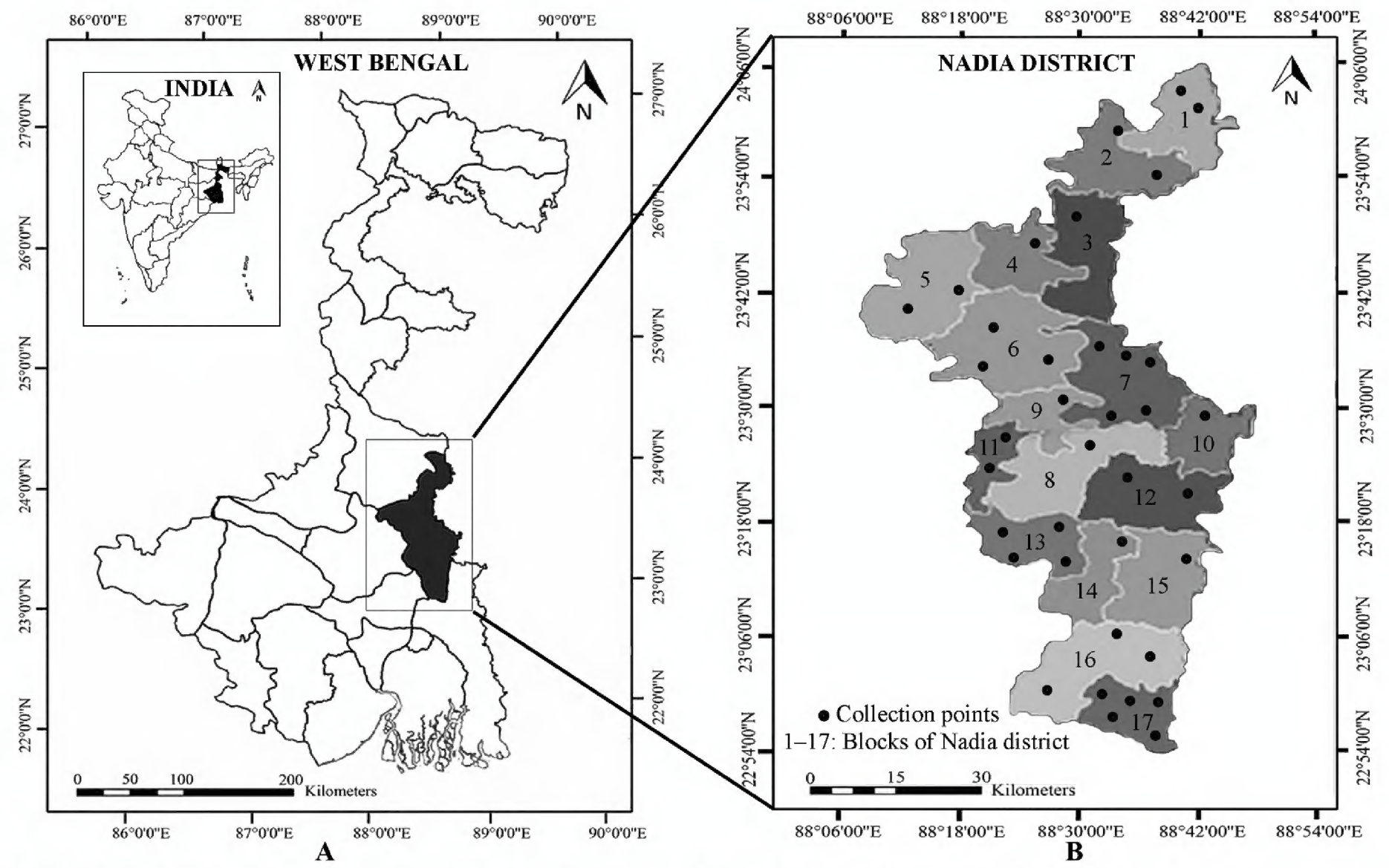

Figure 1. Map of the study area. **A.** West Bengal state of India (inset) showing Nadia district. **B.** Nadia district showing collection points and different blocks: 1 = Karimpur-I, 2 = Karimpur-II, 3 = Tehatta-I, 4 = Tehatta-II, 5 = Kaliganj, 6 = Nakashipara, 7 = Chapra, 8 = Krishnangar-I, 9 = Krishnangar-II, 10 = Krishnangar-III, 11 = Nabadwip, 12 = Hanskhali, 13 = Santipur, 14 = Ranaghat-I, 15 = Ranaghat-II, 16 = Chakdaha, 17 = Haringhata.

Ganges and its tributaries and has diverse ecosystems including agricultural lands, grasslands, tropical and evergreen forests, and wetlands.

Data collection, identification, and analysis. Surveys were carried out in various blocks of the district between April 2017 and March 2019. The insects were collected every month and in each block during the period of survey. Beetle specimens were collected by hand and randomly from dung pats, with pitfall traps baited with excrement, including human, cow, buffalo, and pig, among others, and with ultra-violet light traps. The pitfall traps were made of plastic containers (210 mm in diameter and 150 mm in depth) and buried in the soil up to their rims. The traps contained water-formalin-liquid soap mixture, a wire grid above the mixture, and about 1 L of excrement/dung over the wire grid. The traps were placed in four replicates at the study sites during our survey. Dung beetle samples were collected from the traps after every 5–8 days of exposure in the field. After collection, samples were killed by application of chloroform and preserved in 70% alcohol in glass vials. The collected samples were examined under Sterozoom Binocular Microscope (OLYMPUS SZX7) and identified to species using the literature: Arrow (1931), Balthasar (1963), and Löbl and Löbl (2016). The male genitalia (aedeagus) were dissected and cleaned in 10% KOH solution and then transferred in glycerin for further removal of muscles and fats. Species identifications were done using the keys by Arrow (1931). The current taxonomic status of the species was confirmed following Tarasov and Kabakov (2010), Tarasov and Solodovnikov (2011), Philips (2016), and Schoolmeesters (2019). The identified material was also compared with reference specimens housed at the ZSI museum. After species' confirmation, specimens and male genitalia were preserved in 70% alcohol for future studies. Photographs of adult specimens and genitalia were taken with a camera attached to the microscope.

Material deposition. All insect specimens were deposited in the Kalyani University, Zoology department, Entomology laboratory (KUZEN), West Bengal, India.

Results

The survey yielded approximately 78 scarab species, and among them 22 are *Onthophagus* species. All the recorded *Onthophagus* species are newly recorded for the Nadia district, of which 12 are newly recorded for West Bengal state. Of the 22 new records of Nadia district, *Onthophagus* (*Colobonthophagus*) *dama* (Fabricius, 1798), *O.* (*Colobonthophagus*) *bison* Boucomont, 1919, and *O.* (*Colobonthophagus*) *triceratops* Arrow, 1913 were previously recorded from Jalpaiguri district; *O.* (*C.*) *dama* was also recorded from Kolkata district. No other districts of West Bengal have occurrence records for these beetles, and there are no publications available on these species in the Nadia district. Of the recorded species, *O.* (*C.*) *dama* is the most dominant species with the greatest number of individuals (65) and the widest distribution throughout the study area, followed by *O.* (*Serrophorus*) *sagittarius* (Fabricius, 1775) with 19 individuals.

In the preliminary checklist of Indian *Onthophagus* species (Appendix, Table A1), 190 species are known to occur in India. Of these, *O.* (*Colobonthophagus*) *ramosellus* Bates, 1891 is reported from the greatest number of states and union territories (17) and is the most common species of the genus in India.

All the species of *Onthophagus* recorded by us from the study area are presented below.

Superfamily Scarabaeoidea Latreille, 1802
Family Scarabaeidae Latreille, 1802
Subfamily Scarabaeinae Latreille, 1802
Tribe Onthophagini Burmeister, 1846
Genus *Onthophagus* Latreille, 1802

Onthophagus (*Colobonthophagus*) *agnus* Gillet, 1925

Figure 2A

Material examined (5♀). India, West Bengal, Nadia, Ranaghat (23°09′56″N, 088°33′39″E), S.K.Sarkar leg., 11.V.2017, KUZEN S0124-S0125 (2♀). India, West Bengal, Nadia, Chakdaha (23°04′50″N, 088°30′57″E), B.P.Kharel leg., 18.V.2017, KUZEN S0126-S0128 (3♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head semicircular, with a nearly straight and strongly elevated carina on the vertex; clypeus rugulose, with two strong and curved carinae separating it from the forehead; clypeal margin medially reflexed and bilobed; pronotum coarsely punctate, with a blunt tubercle on each side of its anterior elevation; elytra finely striate, with interstriae finely and sparingly punctate; pygidium finely and sparingly punctate.

Geographical distribution. India: Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, and West Bengal (Arrow 1931; Chandra 2000; Chandra and Ahirwar 2007; Sewak 2009a, 2009b, 2010; Chandra and Gupta 2012c, 2012d; Jadhav and Sharma 2012; Chandra and Gupta 2013; Karimbumkara and Priyadarsanan2013; Bharamal et al. 2014; Gupta et al. 2014; Gajendra and Prasad 2016; Kalawate2018).

Remarks. This species is widely distributed throughout India.

Onthophagus (*Onthophagus*) *andrewesi* Arrow, 1931

Figure 2B

Material examined (1♂). India, West Bengal, Nadia, Haringhata (22°57′48″N, 088°33′41″E), S.K.Sarkar leg., 03.VIII.2017, KUZEN S0129 (1♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the head broad, with rounded sides and a pair of backwardly produced

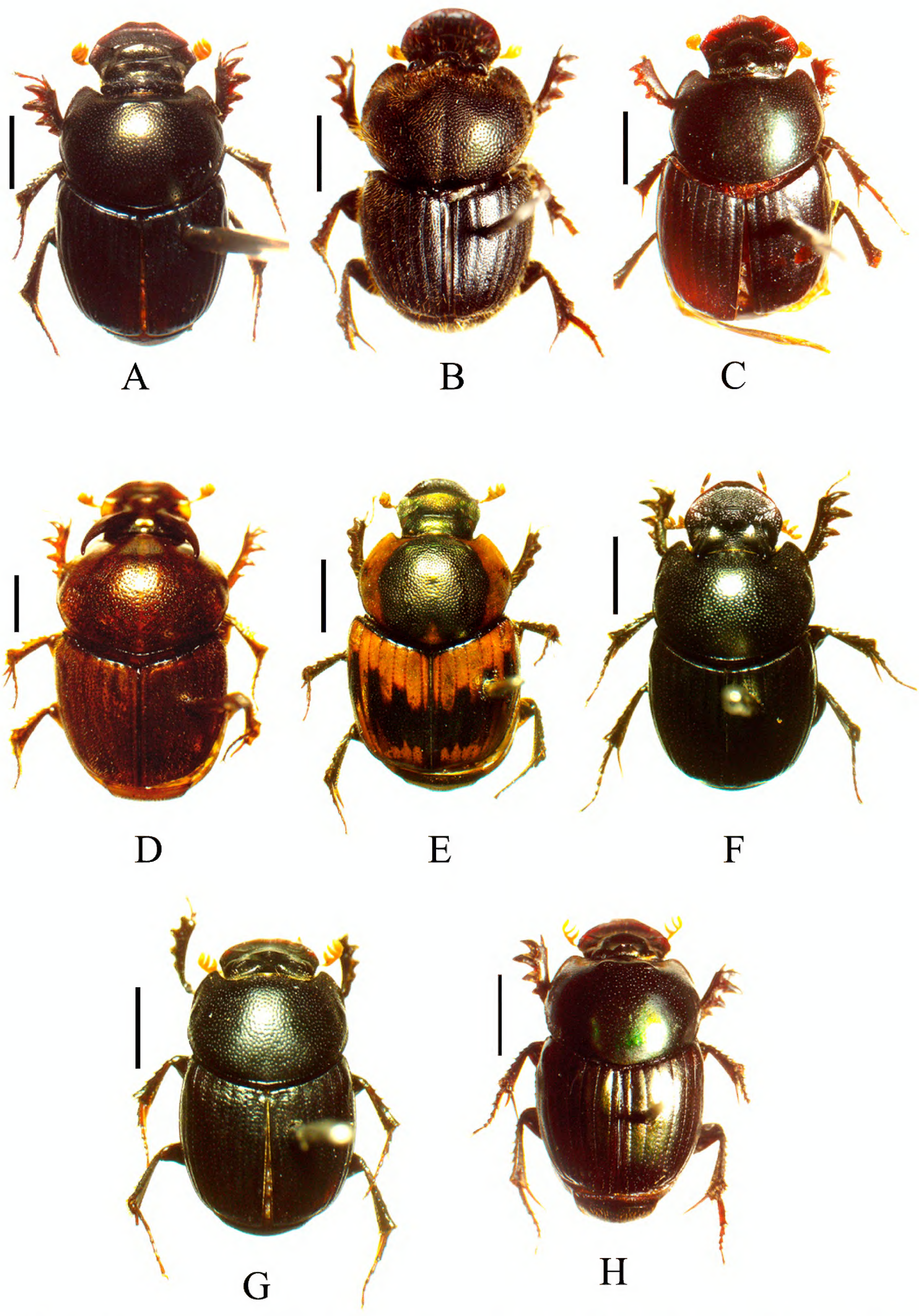

Figure 2. Dorsal habitus of adults of *Onthophagus* Latreille, 1802 species recorded from Nadia district of West Bengal, India. **A.** *Onthophagus* (*Colobonthophagus*) *agnus* Gillet, 1925 ♀. **B.** *Onthophagus* (*Onthophagus*) *andrewesi* Arrow, 1931 ♂. **C.** *Onthophagus* (*Colobonthophagus*) *bison* Boucomont, 1919 ♂. **D.** *Onthophagus* (*Onthophagus*) *cervus* (Fabricius, 1798) ♂. **E.** *Onthophagus* (*Onthophagus*) *ceylonicus* Harold, 1859 ♀. **F.** *Onthophagus* (*Onthophagus*) *circulifer* Arrow, 1931 ♂. **G.** *Onthophagus* (*Onthophagus*) *circulifer* Arrow, 1931 ♀. **H.** *Onthophagus* (*Onthophagiellus*) *crassicollis* Boucomont, 1913 ♀. Scale bars = 2 mm.

recurved horns on the vertex; clypeus produced, with a slightly rounded carina separating it from the forehead; pronotum coarsely punctate, with a mid-longitudinal groove and blunt front angles; elytra finely striate, with interstriae minutely granulate; pygidium sparingly punctate.

Geographical distribution. India: Karnataka, Kerala, Maharashtra, and Tamil Nadu (Arrow 1931; Biswas and Chatterjee 1986b; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015).

Remarks. This species is newly recorded for West Bengal state.

Onthophagus (*Colobonthophagus*) *bison* Boucomont, 1919

Figure 2C

Material examined (1♂). India, West Bengal, Nadia, Karimpur (23°58′31″N, 088°37′32″E), S.K.Sarkar leg., 08.V.2017, KUZEN S0130 (1♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the short and broad head; clypeus rugose, with a posterior sharp curved carina, and margin semicircular; pronotum strongly and closely punctate, with blunt front angles; elytra strongly striate, with flat and sparsely punctate interstriae; metaventrite nearly smooth, shielded with few minute punctures laterally.

Geographical distribution. Myanmar, and Thailand (Arrow 1931; Schoolmeesters 2019). India: Arunachal Pradesh, and West Bengal (Arrow 1931; Sewak 2006; Sarkar et al. 2015; Schoolmeesters 2019).

Onthophagus (*Onthophagus*) *cervus* (Fabricius, 1798)

Figure 2D

Material examined (1♂). India, West Bengal, Nadia, Hanskhali (23°21′40″N, 088°35′56″E), B.P.Kharel leg., 05.VII.2018, KUZEN S0131 (1♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the head narrow, with rounded sides and a pair of long, backwardly sloping, and internally curved horns on the vertex; clypeus truncate, little produced but not pointed, and separated from the forehead by a feeble carina; pronotum strongly, unevenly, and scantily punctate, with sharp front angles; elytra finely striate, with slightly convex and finely punctate interstriae; pygidium coarsely and finely punctate.

Geographical distribution. Pakistan, Saudi Arabia, Sri Lanka, and Vietnam (Sewak 2009a; Biswas and Chatterjee 1986a). India: Andaman and Nicobar Islands, Arunachal Pradesh, Chhattisgarh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Puducherry, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal (Arrow 1931; Biswas and Chatterjee 1986a; Chandra 2000; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2006, 2009a, 2009b, 2010; Jadhav and Sharma 2012; Chandra et al. 2012b; Chandra and Gupta 2012c, 2012d, 2013; Anitha Rani and Sanjayan 2013, Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015; Gajendra and Prasad 2016).

Remarks. This species is widely distributed throughout India.

Onthophagus (*Onthophagus*) *ceylonicus* Harold, 1859

Figure 2E

Material examined (2♀). India, West Bengal, Nadia, Haringhata (22°57′54″N, 088°33′37″E), B.P.Kharel leg., 15.IX.2018, KUZEN S0132-S0133 (2♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the testaceous yellow body colour, with the head, central part of pronotum, longitudinal stripes upon the elytra, and propygidium black; head broad, laterally rounded, with a strong, straight, and transverse ridge on the vertex; clypeus nearly rounded and little reflexed in front, separated from the forehead by a strong and medially raised carina; pronotum strongly punctate, with blunt front angles; elytra strongly striate, with convex and scantily punctate interstriae; pygidium finely and scantily punctate.

Geographical distribution. Sri Lanka (Arrow 1931; Harold 1859). India: Karnataka, and Rajasthan (Arrow 1931; Sewak 2006, 2009a).

Remarks. This species is newly recorded for West Bengal state.

Onthophagus (*Onthophagus*) *circulifer* Arrow, 1931

Figure 2F, G

Material examined (1♂, 1♀). India, West Bengal, Nadia, Nabadwip (23°23′57″N, 088°22′08″E), S.K.Sarkar leg., 08.VII.2018, KUZEN S0134 (1♂), KUZEN S0135 (1♀).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the uniform dorsal colour; head broad, with sparse punctures and a pair of backwardly inclined, and short parallel horns on the vertex, basally fused by a medially toothed carina; clypeus produced and bilobed anteriorly; pronotum strongly convex and annularly punctate; elytra shallowly striate, with interstriae flat and minutely granulate; pygidium coarsely and annularly punctate.

Geographical distribution. Myanmar (Arrow 1931; Karimbumkara and Priyadarsanan 2013). India: Assam, Haryana, Jammu and Kashmir, Maharashtra, Meghalaya, Punjab, Sikkim, Uttarakhand, Uttar Pradesh, and West Bengal (Arrow 1931; Chandra et al. 2012a, 2012c; Karimbumkara and Priyadarsanan 2013, 2016).

Remarks. This species is widely distributed throughout the country.

Onthophagus (*Onthophagiellus*) *crassicollis* Boucomont, 1913

Figure 2H

Material examined (2♀). India, West Bengal, Nadia,

Kaliganj (23°44′02″N, 088°14′02″E), B.P.Kharel leg., 01.VI.2018, KUZEN S0136-S0137 (2♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head narrow, with a straight and strongly elevated carina on the vertex , and a second curved carina on the forehead; clypeus ogival, rounded, and little reflexed anteriorly, transversely rugose, and separated from forehead by a feeble carina; pronotum strongly and closely punctate, with two anterior prominences; elytra finely striate, with flat interstriae; metatarsomere I long, about four times the length of metatarsomere II; pygidium sparsely punctate.

Geographical distribution. China, Iran, Malaysia, Myanmar, Thailand, and Vietnam (Arrow 1931; Schoolmeeters 2019). India: Arunachal Pradesh, and Rajasthan (Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006, 2009a, 2009b; Muhaimin et al. 2015; Schoolmeeters 2019).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Colobonthophagus*) *dama* (Fabricius, 1798)**

Figure 3A, B

Material examined (26♂, 39♀). India, West Bengal, Nadia, Karimpur (23°58′12″N, 088°37′12″E), S.K.Sarkar leg., 08.V.2017, KUZEN S0138–S0141 (4♂). India, West Bengal, Nadia, Kaliganj (23°44′03″N, 088°13′57″E) (23°44′03″N, 088°13′57″E), B.P.Kharel leg., 11.V.2017, KUZEN S0142-S0143 (2♀). India, West Bengal, Nadia, Krishnanagar (23°23′59″N, 088°30′37″E), B.P.Kharel leg., 01.VI.2018, KUZEN S0144–S0146 (3♀), KUZEN S0147-S0151 (5♂). India, West Bengal, Nadia, Nabadwip (23°24′11″N, 088°22′5″E), S.K.Sarkar leg., 03.VI.2018, KUZEN S0152–S0154 (3♀), KUZEN S0155–S0157 (3♂). India, West Bengal, Nadia, Santipur (23°15′56″N, 088°26′10″E), S.K.Sarkar leg., 08.VII.2018, KUZEN S0158–S0163 (6♀), KUZEN S0164–S0171 (8♂). India, West Bengal, Nadia, Haringhata (22°57′49″N, 088°33′36″E), S.K.Sarkar leg., 10.VII.2018, KUZEN S0172–S0179 (8♀). India, West Bengal, Nadia, Hanskhali (23°21′56″N, 088°36′07″E), B.P.Kharel leg., 05.VIII.2018, KUZEN S0180–S0185 (6♀). India, West Bengal, Nadia, Ranaghat (23°09′53″N, 088°33′27″E), B.P.Kharel leg., 09.III.2019, KUZEN S0186–S0192 (7♀). India, West Bengal, Nadia,Tehatta (23°43′53″N, 088°31′44″E), S.K.Sarkar leg., 22.VIII.2018, KUZEN S0193–S0198 (6♂). India, West Bengal, Nadia, Chapra (23°30′50″N, 088°32′56″E), B.P.Kharel leg., 23.IX.2018, KUZEN S0199–S0202 (4♀).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the body entirely glabrous dorsally; head short and broad, with a pair of long, backwardly inclined, outwardly curved, and toothed horns on the vertex; clypeus strongly punctate; clypeal margin semi-circular and medially slightly projected; pronotum finely and sparsely punctate, with the sides nearly rounded and basal margins slightly angulate medially; elytra distinctly striate, with interstria enearly flat and finely and scarcely punctate; pygidium moderately punctate.

Geographical distribution. Bhutan, China, Nepal, and Sri Lanka (Arrow1931; Biswas and Chatterjee 1986a; Singh et al. 2017). India: Arunachal Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal (Arrow 1931; Biswas and Chatterjee 1985, 1986a, 1991; Chandra 2000, 2005; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2006; Chandra and Gupta 2011a, 2012c, 2012d, 2012e, 2013; Jadhav and Sharma 2012; Chandra et al. 2012a, 2012b, 2012c; AnithaRani and Sanjayan2013; Karimbumkara and Priyadarsanan 2013; Bharmal et al. 2014; Gupta et al. 2014; Sarkar et al. 2015; Sathiandran et al. 2015; Gajendra and Prasad 2016; Singh et al. 2017; Kalawate 2018).

Remarks. This species is widely distributed throughout the country.

***Onthophagus* (*Colobonthophagus*) *hindu* Arrow, 1931**

Figure 3C

Material examined (2♀). India, West Bengal, Nadia, Santipur (23°15′57″N, 088°26′20″E), B.P.Kharel leg., 23.VIII.2018, KUZEN S0203–S0204 (2♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head broad and round, with a short tubercle in the middle of the posterior margin; clypeus bluntly bilobed, with a transverse carina separating it from the forehead; pronotum finely and closely punctate, with the sides and basal margin gently rounded; elytra with flat and sparsely punctate interstriae; pygidium finely and sparsely punctate.

Geographical distribution. Afghanistan, Pakistan, and Sri Lanka (Chandra et al. 2012b; Gupta et al. 2014). India: Andhra Pradesh, Chhattisgarh, Jammu and Kashmir, Karnataka, Madhya Pradesh, and Maharashtra (Arrow 1931; Chandra and Gupta 2011a, 2011b, 2012c, 2012d, 2013; Chandra et al. 2012b; Karimbumkara and Priyadarsanan 2013, 2016; Gupta et al. 2014; Siddiqui et al. 2014; Gajendra and Prasad 2016; Kalawate2018).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Onthophagus*) *mauritii* Boucomont, 1919**

Figure 3D

Material examined (1♀). India, West Bengal, Nadia, Chapra (23°30′41″N, 088°33′01″E), S.K.Sarkar leg., 12. IX.2018, KUZEN S0205 (1♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head short and broad; clypeus rugosely punctate, separated from the forehead by a curved carina, with anterior margin feebly

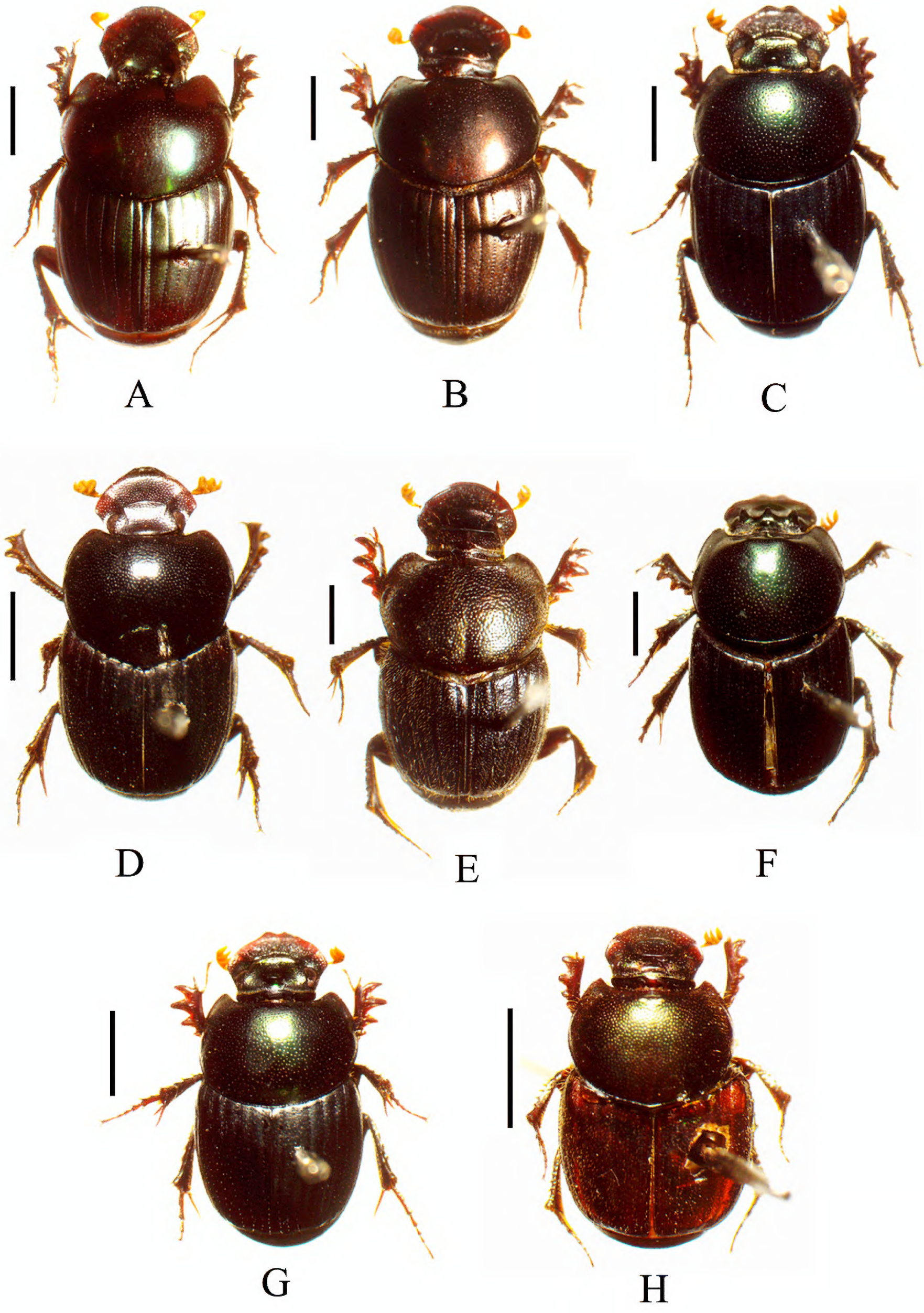

Figure 3. Dorsal habitus of male/female of *Onthophagus* Latreille, 1802 species recorded from Nadia district of West Bengal, India. **A.** *Onthophagus* (*Colobonthophagus*) *dama* (Fabricius, 1798) ♂. **B.** *Onthophagus* (*Colobonthophagus*) *dama* (Fabricius, 1798) ♀. **C.** *Onthophagus* (*Colobonthophagus*) *hindu* Arrow, 1931 ♀. **D.** *Onthophagus* (*Onthophagus*) *mauritii* Boucomont, 1919 ♀. **E.** *Onthophagus* (*Indonthophagus*) *mopsus* (Fabricius, 1792) ♀. **F.** *Onthophagus* (*Colobonthophagus*) *paliceps* Arrow, 1931 ♂. **G.** *Onthophagus* (*Colobonthophagus*) *pardalis* Boucomont, 1914 ♀. **H.** *Onthophagus* (*Onthophagus*) *porcus* Arrow, 1931 ♂. Scale bars = 2 mm.

sinuate; pronotum convex and uniformly punctate; elytra finely striate; pygidium coarsely punctate.

Geographical distribution. India: Arunachal Pradesh, Bihar, Karnataka, Maharashtra, and Tamil Nadu (Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Chandra 2009; Karimbumkara and Priyadarsanan 2013).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Indonthophagus*) *mopsus* (Fabricius, 1792)**
Figure 3E

Material examined (1♀). India, West Bengal, Nadia, Krisnanagar (23°24′20″N, 088°30′17″E), B.P.Kharel leg., 12.V.2017, KUZEN S0206 (1♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head broad; clypeus rugosely punctate, with anterior margin rounded, reflexed, and separated from the forehead by a curved carina; pronotum finely and densely punctate, with a lateral scarce impression posteriorly; elytra finely striate; pygidium strongly punctate; metaventrite densely punctate laterally.

Geographical distribution. Afghanistan and Pakistan (Arrow 1931; Singh et al. 2017). India: Bihar, Chandigarh, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Punjab, Rajasthan, Sikkim, Uttarakhand, Uttar Pradesh, and West Bengal (Arrow 1931; Chandra 2005; Chandra and Gupta 2012c, 2012d); Karimbumkara and Priyadarsanan 2013; Singh et al. 2017).

Remarks. This species is widely distributed throughout the country.

***Onthophagus* (*Colobonthophagus*) *paliceps* Arrow, 1931**
Figure 3F

Material examined (1♂). India, West Bengal, Karimpur (23°58′27″N, 088°37′25″E), B.P.Kharel leg., 08.V.2017, KUZEN S0207 (1♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the head bearing a short, slender and upwardly curved median horn, along with a pair of short, transverse and rectangular erect process arising from the inner margin of each eye; forehead minutely punctate; pronotum minutely and sparsely punctate, with the anterior angles bluntly produced and posterior margin slightly rounded; front tibia with short and spatulate terminal spur.

Geographical distribution. Pakistan (Siddiqui et al. 2014). India: Karnataka, Madhya Pradesh, and Uttarakhand (Arrow 1931; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013; Siddiqui et al. 2014).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Colobonthophagus*) *pardalis* (Fabricius, 1798)**
Figure 3G

Material examined (2♀). India, West Bengal, Nadia, Haringhata (22°57′42″N, 088°33′46″E), B.P.Kharel leg., 10.I.2019, KUZEN S0208–S0209 (2♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head broad and anteriorly semicircular, vertex with a short and basally broad horn; clypeus transversely rugose, with a feebly curved fronto-clypeal carina separating it from the forehead and another straight carina just behind; clypeal margin strongly reflexed and bilobed; elytra finely striate, with interstriae slightly convex and closely punctate; protibia with slender and curved spur.

Geographical distribution. India: Karnataka, Maharashtra, and Tamil Nadu (Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan2013).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Onthophagus*) *porcus* Arrow, 1931**
Figure 3H

Material examined (1♂). India, West Bengal, Nadia, Nakashipara (23°35′19″N, 088°21′08″E), S.K.Sarkar leg., 11.IX.2018, KUZEN S0209 (1♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the head narrow and curved laterally, strongly punctate, with a straight and strongly elevated carina upon the vertex; clypeus rounded, with a curved carina separating it from the forehead; pronotum finely and closely punctate, with anterior angles fairly sharp; elytra finely striate, with intervals flat and closely punctate; pygidium closely punctate.

Geographical distribution. Bangladesh (Biswas and Chatterjee 1985). India: Arunachal Pradesh, and Karnataka (Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Karimbumkara and Priyadarsanan 2013).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Colobonthophagus*) *quadridentatus* (Fabricius, 1798)**
Figure 4A

Material examined (3♀). India, West Bengal, Nadia, Krishnanagar (23°24′14″N, 088°30′05″E), B.P.Kharel leg., 30.IX.2018, KUZEN S0210–S0212 (3♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head broad, with a transverse carina on the vertex and another strongly elevated carina on the forehead; clypeus rugose, with a strong and nearly straight carina separating it from the forehead; clypeal margin rounded and strongly reflexed; pronotum strongly punctate, with lateral margins slightly sinuate anteriorly, and posteriorly rounded;

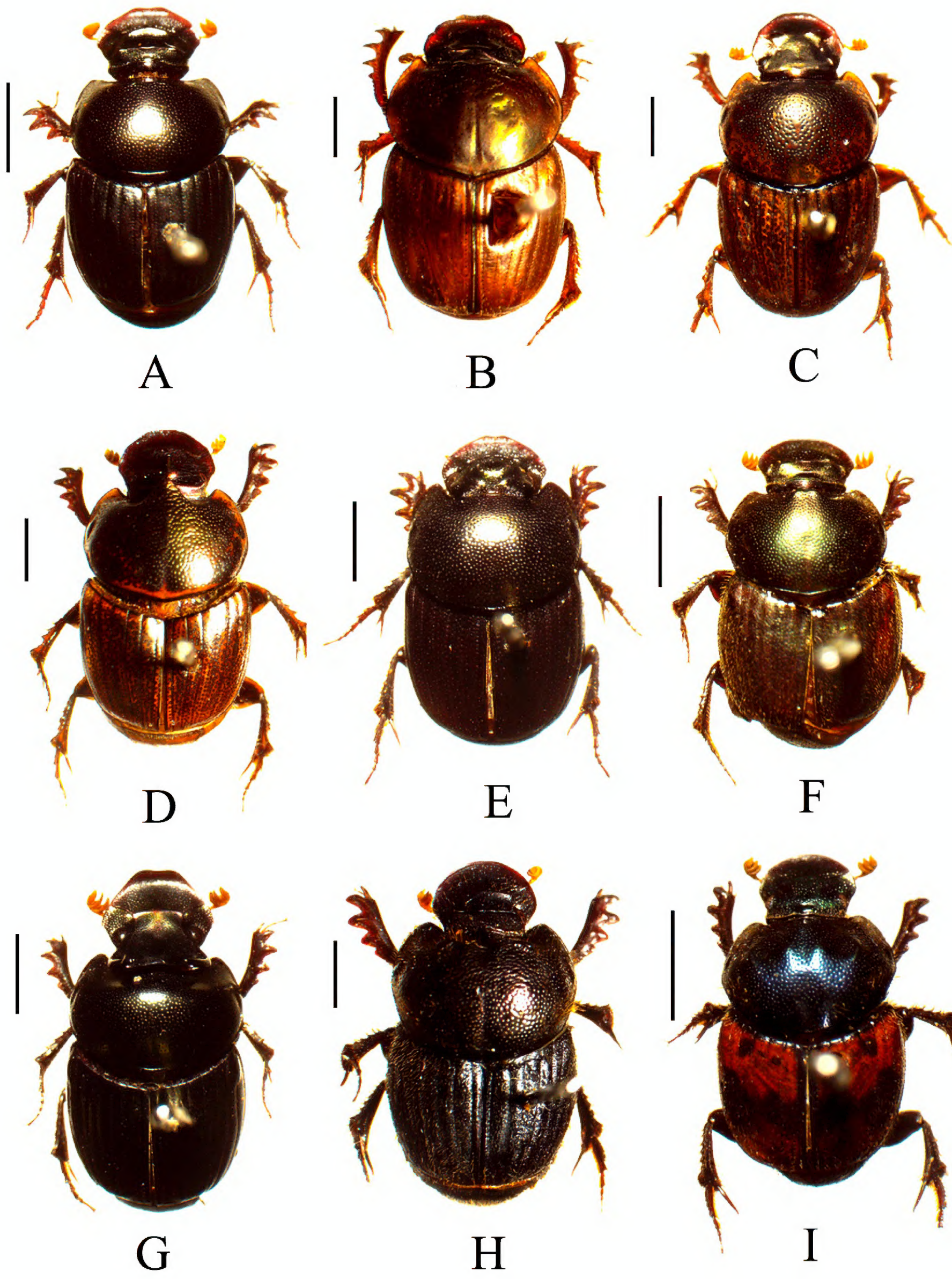

Figure 4. Dorsal habitus of male/female of *Onthophagus* Latreille, 1802 species recorded from Nadia district of West Bengal, India. **A.** *Onthophagus* (*Colobonthophagus*) *quadridentatus* (Fabricius, 1798) ♀. **B.** *Onthophagus* (*Serrophorus*) *rectecornutus* Lansberge, 1883 ♂. **C.** *Onthophagus* (*Serrophorus*) *Sagittarius* (Fabricius, 1775) ♂. **D.** *Onthophagus* (*Serrophorus*) *Sagittarius* (Fabricius, 1775) ♀. **E.** *Onthophagus* (*Eremonthophagus*) *semicinctus* d'Orbigny, 1897 ♀. **F.** *Onthophagus* (*Onthophagus*) *socialis* Arrow, 1931 ♀. **G.** *Onthophagus* (*Colobonthophagus*) *triceratops* Arrow, 1913 ♂. **H.** *Onthophagus* (*Indonthophagus*) *turbatus* Walker, 1858 ♀. **I.** *Onthophagus* (*Onthophagus*) *zebra* Arrow, 1931 ♀. Scale bars = 2 mm.

elytra shining and strongly striate, with flat interstriae; pygidium opaque and finely punctate.

Geographical distribution. Pakistan, Sri Lanka, and Taiwan (Arrow 1931; Biswas and Chatterjee 1986a; Gupta et al. 2014). India: Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal (Arrow 1931; Biswas and Chatterjee 1986a, 1991; Chandra 2000, 2005; Chandra and Ahirwar 2005a, 2007; Chandra and Gupta 2011a, 2012c, 2012d, 2012e, 2013; Chandra et al. 2012b, 2012c; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014; Siddiqui et al. 2014; Gajendra and Prasad 2016; Anto and Vinod 2017).

Remarks. This species is widely distributed throughout the country.

***Onthophagus* (*Serrophorus*) *rectecornutus* Van Lansberge, 1883**

Figure 4B

Material examined (1♂). India, West Bengal, Nadia, Karimpur (23°58′32″N, 088°37′49″E), B.P.Kharel leg., 10.XII.2018, KUZEN S0213 (1♂).

Identification (♂). It can be distinguished from other *Onthophagus* species by the head short and broad, with a pair of straight, backwardly directed, and divergent horns on the vertex; clypeus semicircular, with a short and acuminate anterior carina; clypeal margin entire and strongly reflexed; pronotum anteriorly granular, with a longitudinal sulcus present medially, laterally slightly curved, posteriorly strongly rounded, and anterior angles sharp; elytra deeply striate, with interstriae finely punctate.

Geographical distribution. Bangladesh, Bhutan, Malaysia, Myanmar, Sri Lanka, Thailand, and Vietnam (Arrow 1931; Schoolmeesters 2019). India: Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Nagaland, Tamil Nadu, Tripura, Uttarakhand, and West Bengal (Arrow 1931; Biswas and Chatterjee 1985, 1986a; Chatterjee and Biswas 2000; Sewak 2006; AnithaRani and Sanjayan2013; Karimbumkara and Priyadarsanan 2013; Muhaimin et al. 2015; Sathiandran et al. 2015; Schoolmeesters 2019).

Remarks. This species is widely distributed throughout the country.

***Onthophagus* (*Serrophorus*) *Sagittarius* (Fabricius, 1775)**

Figure 4C, D

Material examined (12♂, 7♀). India, West Bengal, Nadia, Haringhata (22°57′48″N, 088°33′45″E), S.K.Sarkar leg, 10.IX.2018, KUZEN S0214–S0215 (2♀). India, West Bengal, Nadia, Nakashipara (23°35′07″N, 088°20′57″E), B.P.Kharel leg., 20.IX.2018, KUZEN S0216–S0219 (4♂). India, West Bengal, Nadia, Santipur (23°16′01″N, 088°26′29″E), S.K.Sarkar leg., 23.IX.2018, KUZEN S0220–S0223 (4♀). India, West Bengal, Nadia, Chapra (23°30′38″N, 088°33′08″E), B.P.Kharel leg., 24.X.2018, KUZEN S0224 (1♀). India, West Bengal, Nadia, Tehatta (23°43′46″N, 088°31′56″E), B.P.Kharel leg., 22.XI.2018, KUZEN S0225–S0230 (6♂). India, West Bengal, Nadia, Chakdaha (23°04′46″N, 088°30′56″E), S.K.Sarkar leg., 10.II.2019, KUZEN S0231–S0232 (2♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the head subcircular, with angulate sides; clypeus rugose, with a pair of erect horns upon the fronto-clypeal suture; clypeal margin reflexed; pronotum densely punctate, anteriorly declivous and posteriorly slightly margined; elytra strongly striate, with interstriae flat and coarsely punctate; pygidium finely and sparsely punctate.

Geographical distribution. Australia, China, Indonesia, Malaysia, Myanmar, Nepal, and United States of America (Arrow 1931; Biswas and Chatterjee 1986a; Sewak 2009b). India: Arunachal Pradesh, Chhattisgarh, Madhya Pradesh, Odisha, Rajasthan, Tripura, Uttarakhand, Uttar Pradesh, and West Bengal (Arrow 1931; Biswas and Chatterjee 1986a, 1986b, 1991; Chatterjee and Biswas 2000; Chandra 2000; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2006, 2009b; Chandra and Gupta 2012c, 2012d, 2013; Gajendra and Prasad 2016).

Remarks. This species is widely distributed throughout the country.

***Onthophagus* (*Eremonthophagus*) *semicinctus* d'Orbigny, 1897**

Figure 4E

Material examined (1♀). India, West Bengal, Nadia, Chapra (23°30′51″N, 088°33′08″E), B.P.Kharel leg., 23.IX.2017, KUZEN S0233 (1♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the head broad, with small rudimentary horns on the vertex and a transverse and medially projected carina on the forehead; clypeus transversely rugose, with a curved carina separating it from the forehead; clypeal margin sinuous and feebly excised medially; pronotum finely and coarsely punctate, with anterior angles bluntly produced, and anterior margin rounded; elytra finely striate, with flat interstriae; pygidium sparsely punctate.

Geographical distribution. Pakistan (Arrow 1931). India: Gujarat, Karnataka, Maharashtra, Rajasthan, and Uttar Pradesh (Arrow 1931; Sewak 2009a, 2009b, 2010; Karimbumkara and Priyadarsanan 2013).

Remarks. This species is a new record for West Bengal state.

***Onthophagus* (*Onthophagus*) *socialis* Arrow, 1931**

Figure 4F

Material examined (1♀). India, West Bengal, Santipur (23°15′57″N, 088°26′29″E), B.P.Kharel leg., 23.VIII.2018, KUZEN S0234 (1♀).

Identification (♀)**.** This species can be distinguished from other *Onthophagus* species by the head broad, strongly rounded laterally, with a straight carina on vertex; clypeus rugose, anteriorly rounded, with a strong carina separating it from the forehead; pronotum strongly punctate , with a pair of prominences behind the front margin, anterior angles blunt; elytra deeply striate, with convex interstriae; metaventrite coarsely punctate.

Geographical distribution. India: Maharashtra, Karnataka, and Tamil Nadu (Arrow 1931; Chandra 2005; Karimbumkara and Priyadarsanan 2013).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Colobonthophagus*) *triceratops* Arrow, 1913**

Figure 4G

Material examined (1♂). India, West Bengal, Nadia, Nakashipara (23°35′34″N, 088°20′55″E), S.K. Sarkar leg., 11.IX.2018, KUZEN S0235 (1♂).

Identification (♂). This species can be distinguished from other *Onthophagus* species by the broad head, which is angularly dilated above eyes and with a pair of strongly curved and convergent horns on the vertex, the base of which is flat and plate like; clypeus truncate, with a feeble straight carina separating it from the forehead, clypeal margin strongly reflexed; pronotum minutely and sparsely punctate, with anterior angles pointed and posteriorly slightly rounded; metaventrite coarsely punctate laterally.

Geographical distribution. India: Arunachal Pradesh, Assam, Gujarat, Karnataka, Rajasthan, Tripura, and West Bengal (Arrow 1931; Biswas and Chatterjee 1985, 1986a; Chatterjee and Biswas 2000; Sewak 2006, 2009a; Karimbumkara and Priyadarsanan 2013; Sarkar et al. 2015).

Remarks. This species is widely distributed throughout the country.

***Onthophagus* (*Indonthophagus*) *turbatus* Walker, 1858**

Figure 4H

Material examined (1♀). India, West Bengal, Nadia, Chakdaha (23°04′41″N, 088°31′05″E), B.P.Kharel leg., 10.XI.2018, KUZEN S0236 (1♀).

Identification (♀). It can be distinguished from other *Onthophagus* species by the broad head, with a transverse and strongly elevated carina on the vertex; clypeus coarsely punctate, with a curved carina separating it from the forehead; pronotum finely and closely punctate, with the anterior margin medially elevated and with a pair of prominences on each side of the upper edge; pygidium finely punctate.

Geographical distribution. China, Myanmar, Sri Lanka, Thailand, and Vietnam (Karimbumkara and Priyadarsanan 2013; Schoolmeesters 2019). India: Karnataka, Kerala, Maharashtra, Odisha, Puducherry, and Tamil Nadu (Arrow 1931; AnithaRani and Sanjayan2013; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015; Schoolmeesters 2019).

Remarks. This species is newly recorded for West Bengal state.

***Onthophagus* (*Onthophagus*) *zebra* Arrow, 1931**

Figure 4I

Material examined (1♀). India, West Bengal, Chapra (23°30′47″N, 088°33′12″E), S.K.Sarkar leg., 11.IX.2018, KUZEN S0237 (1♀).

Identification (♀). This species can be distinguished from other *Onthophagus* species by the narrow head, with a straight carina on the vertex; clypeus coarsely punctate, with a rounded carina separating it from the forehead; pronotum finely and densely punctate, with a broad prominence just behind the anterior margin; elytra longitudinally striped; metaventrite finely and sparsely punctate.

Geographical distribution. India: Madhya Pradesh, Maharashtra, and Karnataka (Arrow 1931; Chandra 2000; Chandra and Ahirwar2007; Jadhav and Sharma 2012; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013).

Remarks. This species is newly recorded for West Bengal state.

Discussion

The faunistic survey of the dung beetle fauna of the Nadia district of the Indian West Bengal state found approximately 78 species, of which 22 belong to the genus *Onthophagus*. All the species of *Onthophagus* reported here are new records for Nadia district, and 12 of them are newly reported for the state of West Bengal: *O.* (*O.*) *andrewesi*, *O.* (*O.*) *ceylonicus*, *O.* (*Onthophagiellus*) *crassicollis*, *O.* (*Colobonthophagus*) *hindu*, *O.* (*O.*) *mauritii*, *O.* (*Colobonthophagus*) *paliceps*, *O.* (*Colobonthophagus*) *pardalis*, *O* .(*O.*) *porcus*, *O.* (*Eremonthophagus*) *semicinctus*, *O.* (*O.*) *socialis*, *O.* (*Indonthophagus*) *turbatus*, and *O.* (*O.*) *zebra*. Among all recorded species, *O.* (*Colobonthophagus*) *dama* seems to be the dominant species as it is the most abundant and more widely distributed species throughout the studied area followed by *O.* (*Serrophorus*) *sagittarius*.

We also compiled a preliminary checklist of Indian *Ontophagus* by gathering geographic data from past literature and labels of reference specimens deposited in the ZSI (Appendix, Table A1). Until now, a total of 190 species are known to occur across India. Of these, *O.* (*Colobonthophagus*) *ramosellus* shows widest distribution throughout the country as it is reported from maximum number of states and union territories (17) of India followed by *O.* (*Colobonthophagus*) *dama*, *O.* (*Colobonthophagus*) *ramosus*, and *O.* (*Colobonthophagus*) *quadridentatus* (16 each). In turn, 44 species have so far

been recorded specifically from West Bengal, which is about a quarter of the total species recorded from India.

Of the total 190 species presented in the India checklist, 84 are reported only from India, which means that about 44% of the *Onthophagus* present in the country are endemic.

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Authors' Contributions

BPK and SKS collected the data, identified the specimens, and prepared the figures, including the map of the study area. BPK, PS, and SKS made the analysis, wrote the text, and prepared the checklist. All the authors checked and approved the last version of the manuscript.

References

Ali SMS, Naeem M, Baig F, Shahzad A, Zia A (2015) New records, distributional notes and species diversity of dung beetles (Coleoptera: Scarabaeidae: Scarabaeinae) from Pothohar Plateau of Punjab, Pakistan. Journal of Entomology and Zoology Studies 3 (3): 1–6.

Anitha Rani A, Sanjayan KP (2013) Community composition of dung beetle and population dynamics of *Tiniocellus spinipes* in a scarab Jungle ecosystem. Asian Journal of Biological and Life Sciences 2 (3): 241–246.

Anto A, Vinod KV (2017) Succession of dung beetles (Scarabaeinae: Coleoptera) in the cow dung pats of a tropical agro habitat in Kerala, South India. IOSR Journal of Environmental Science, Toxicology and Food Technology 11 (6): 46–49. https://doi.org/10.9790/2402-1106024649

Arrow GJ (1931) The fauna of British India including Ceylon and Burma, part III, Coleoptera: Lamellicornia (Coprinae). Taylor and Francis, London, 353pp.

Arrow GJ (1933) Notes on coprid Coleoptera with descriptions of a new genus and a few new species. The Annals and Magazine of natural History, including Zoology, Botany and Geology, London (Series 10) 12: 421–430. https://doi.org/10.1080/00222933308673705

Balthasar V (1933) Neue Coprohagen-Artenaus British-Indien und Indochina. Časopis Československé Společnosti Entomologické, Praha 30: 45–51.

Balthasar V (1963) Monographie der Scarabaeidae and Aphodiidae der Palaearktischen und Orientalischen Region, Coleoptera: Lamellicornia, Coprinae (Onitini, Oniticellini, Onthophagini). Tschechoslowakische Akademie der Wissenschaften, Prague, 137–226.

Bezděk A, Hájek J (2013) Catalogue of type specimens of beetles (Coleoptera) deposited in the National Museum, Prague, Czech Republic, Scarabaeidae: Scarabaeinae: Onitini, Onthophagini, Phanaeini, Scarabaeini and Sisyphini. Acta Entomologica Musei Nationalis Pragae 53 (1): 387–442.

Bharamal DL, Koli YJ, Korgaonkar DS, Bhawane GP (2014) Scarab (Scarabaeidae) fauna of Sindhudurg district, Maharashtra, India. Biolife 2 (4): 1301–1304.

Biswas S (1978) Studies on the scarab beetles (Coleoptera:Scarabaeidae) of north-eastern India: a new species and notes on other Indian species of subgenus *Strandius*, genus *Onthophagus*. Journal of Bombay Natural History Society 75 (3): 911–913.

Biswas S (1979) Studies on the scarab beetles (Coleoptera:Scarabaeidae) of north India, part-II: three new species and two new records from India. Journal of Bombay Natural History Society 76: 339–344.

Biswas S, Chatterjee SK (1985) Insecta: Coleoptera: Scarabaeidae: Coprinae.*Records of the Zoological Survey India* 82 (1–4): 147–177.

Biswas S, Chatterjee SK (1986a) Dung beetles fauna (Coleoptera: Scarabaeidae: Scarabainae) of Palamou Tiger Reserve, Bihar, with description of a new species. Records of the Zoological Survey of India 83 (3–4): 57–67.

Biswas S, Chatterjee SK (1986b) Scarabaeidae (India Coleoptera) of Silent Valley, Kerala, India with description of three new species. Records of the Zoological Survey of India 84 (1–4): 79–96.

Biswas S, Chatterjee SK (1991) Insecta: Coleoptera: Scarabaeidae. Fauna of Orissa, State Fauna Series, Zoological Survey of India 1 (3): 243–262.

Biswas S, Chatterjee SK, Sengupta T (1999) The Scarabaeidae of Andaman and Nicobar islands, with description of a new species. Records of Zoological Survey of India 97: 51–72.

Boucomont A (1921) Onthophages nouveaux de l'Inde [Col. Scabaeidae]. Bulletin de la Société Entomologique de France 26 (4): 44–46.

Cambefort Y (1991) Biogeography and evolution. In: Hanski I, Cambefort Y (Eds) Dung beetle ecology. Princeton University Press, Princeton, 51–67.

Chandra K (2000) Inventory of scarabaeid beetles (Coleoptera) from Madhya Pradesh, India. Zoos' Print Journal 15 (11): 359–362. https://doi.org/10.11609/JoTT.ZPJ.15.11.359-62

Chandra K (2002) On a collection of scarabaeid beetles from Pench Tiger Reserve (Seoni), Madhya Pradesh. Journal of Tropical Forestry 18 (2–3): 104–107.

Chandra K (2005) Insecta: Coleoptera: Scarabaeidae. Fauna of Western Himalayas, Himachal Pradesh, Zoological Survey of India 2: 141–155.

Chandra K (2009) Fauna of Tamil Nadu. Zoological Survey of India, State Fauna Series 17 (1): 79–89.

Chandra K, Ahirwar SC (2005a) Scarabaeid beetles of Bandhavgarh National Park, Madhya Pradesh. Zoos' Print Journal 20 (8): 1961–1964. https://doi.org/10.11609/JoTT.ZPJ.1281.1961-4

Chandra K, Ahirwar SC (2005b) Scarabaeid beetles (Coleoptera) of Kanha Tiger Reserve, Madhya Pradesh. Records of the Zoological Survey of India 105 (1–2): 147–155.

Chandra K, Ahirwar SC (2007) Insecta: Coleoptera: Scarabaeidae, fauna of Madhya Pradesh (including Chhattisgarh). Zoological Survey of India, State Fauna Series 15: 273–300.

Chandra K, Gupta D (2011a) Study of scarabaeid beetles (Coleoptera) of Veerangana Durgavati Wildlife Sanctuary, Damoh, Madhya Pradesh, India. Deccan Current Science 5: 272–278.

Chandra K, Gupta D (2011b) Two new records of genus *Onthophagus* Latreille, 1802 (Coleoptera: Scarabaeidae) from Madhya Pradesh, India. Uttar Pradesh Journal of Zoology 31 (2): 253–255.

Chandra K, Gupta D (2012a) New distributional record of five species of *Onthophagus* (Coleoptera: Scarabaeidae: Scarabaeinae) from central India. Scholarly Journal of Agricultural Science 2 (1): 8–12.

Chandra K, Gupta D (2012b) Study of external male genitalia of ten species of Indian dung beetles (Coleoptera: Scarabaeidae: Scarabaeinae). International Journal of Science and Nature 3 (3): 635–638.

Chandra K, Gupta D (2012c) An inventory of scarab beetles (Coleoptera: Scarabaeidae) of Achanakmar-Amarkantak Biosphere Reserve, Chhattisgarh, India. International Journal of Science and Nature 3 (4): 886–891.

Chandra K, Gupta D (2012d) First report on five species of genus *Onthophagus* Latreille, 1802 (Coleoptera, Scarabaeidae) from Madhya Pradesh, India and their description of external male genitalia. Biodiversity Journal 3 (2): 99–106.

Chandra K, Gupta D (2012e) Diversity and composition of dung beetles (Scarabaeidae: Scarabaeinae: Aphodiinae) assemblages in Singhori Wildlife Sanctury, Raisen, Madhya Pradesh (India). Munis Entomology & Zoology 7 (2): 812–827.

Chandra K, Gupta D (2013) Taxonomic studies on dung beetles (Coleoptera: Scarabaeidae, Geotrupidae, Hybosoridae) of Chhattisgarh, India. Munis Entomology & Zoology 8 (1): 331–360.

Chandra K, Khan S, Gupta D, Singh SP (2011) Additional records of scarab fauna (Coleoptera: Scarabaeidae) of Pachmarhi Biosphere Reserve, Madhya Pradesh, India. National Journal of Life Sciences 8 (1): 65–68.

Chandra K, Gupta D, Uniyal VP, Bharadwaj M, Sanyal AK (2012a) Studies on scarabaeid beetles (Coleoptera) of Govind Wildlife Sanctuary, Garhwal, Uttarakhand, India. Biological Forum—an International Journal 4 (1): 48–54.

Chandra K, Gupta D, Uniyal VP, Sanyal A, Bhargav V (2012b) Taxonomic studies on lamellicorn scarabaeids (Coleoptera) of Simbalbara Wildlife Sanctuary, Sirmour, Himachal Pradesh, India. Records of the Zoological Survey of India 112 (1): 81–91.

Chandra K, Khan S, Gupta D (2012c) New records to the species diversity of family Scarabaeidae and Hybosoridae (Coleoptera: Scarabaeoidea) of Jabalpur, Madhya Pradesh (India). Academic Journal of Entomology 5 (1): 28–36.

Chandra K, Singh RK (2004) On a collection of scarabaeid beetles (Coleoptera) from Pachmarhi Biosphere Reserve, Madhya Pradesh. Records of the Zoological Survey of India 102 (3–4): 43–46.

Chandra K, Singh PS (2010) Scarabaeid beetles (Coleoptera) of Achanakmar Wildlife Sanctuary, Chhattisgarh. National Journal of Life Sciences 7 (1): 71–74.

Chatterjee SK, Biswas S (2000) Insecta: Coleoptera: Scarabaeidae. Zoological Survey of India, Fauna of Tripura, State Fauna Series 7 (3): 87–98.

Davis ALV, Scholtz CH, Philips TK (2002) Historical biogeography of scarabaeine dung beetles. Journal of Biogeography 29 (9): 1217–1256.

Endrödi S (1974) The scientific results of Dr. G. Topal's collecting in India.Nr. 5.Sammelergebnisseaus der Superfamilie Lamellicornia, Casopis Slezkehomuzea Opava 23: 1–5.

Frey G (1954) Beschreibungneuer Onthophagus-Artenaus dem Museum Frey, Zoologischen Museum Berlin und Museum Paris (coll. Oberthür). *Entomologische Arbeitenaus dem Museum G. Frey Tutzingbei München* 5:741–745.

Frey G (1962) Neue Onthophagus-Arten (Col. Scarab.). *Entomologische Arbeitenaus dem Museum G. Frey Tutzingbei München* 13: 617–618.

Frey G (1964) Ein neuer Indischer Onthophagus (Col.Copr.). *Entomologische Arbeitenaus dem Museum G. Frey Tutzingbei München* 15 (1): 290.

Frey G (1975) Neue Onthophagenaus Südindien und Afrika (Col. Scarabaeidae). Entomologische Arbeitenaus dem Museum G. Frey Tutzingbei München 26: 198.

Gaikwad AR, Bhawane GP (2016) Observation on life cycle and nesting behavior of dung beetle *Onthophagus catta* (Fabricius). International Journal of Zoology Studies 1 (7): 09–13.

Gajendra N, Prasad SK (2016) A Review of Coleoptera diversity of Chhattisgarh: updated checklist 2015. International Journal of Science and Research 5 (4): 710–714.

Gordon RD, Oppenheimer JR (1977) Taxonomy and ecology of two species of Indian *Onthophagus*. Oriental Insects 9 (4): 495–501. https://doi.org/10.1080/00305316.1975.10434516

Gupta D, Chandra K, Khan S (2014) An updated checklist of scarabaeoid beetles (Coleoptera: Scarabaeoidea) of Pench Tiger Reserve, Madhya Pradesh, India. Journal of Entomology and Zoology Studies 2 (5): 225–240.

Harold E (1859) Beitrage zur kenntnis einiger coprophagen lamellicornien (I. Stück). Berliner Entomologische Zeitschrift 3: 193–224.

Huijbregts J, Krikken J (2009) Sulawesi *Onthophagus* with paraocular protrusions: ten new species, with a key (Coleoptera: Scarabaeidae: Scarabaeinae). Tijdschriftvoor Entomologie 152 (2): 209–236. https://doi.org/10.1163/22119434-900000278

Jadhav MJ, Sharma RM (2012) Insecta: Coleoptera: Scarabaeidae (scarabaeid beetles). Fauna of Maharashtra, State Fauna Series, Zoological Survey of India 20 (2): 489–494.

Kabakov ON (2006) A little known and new species of the tribe Onthophagini from India, Pakistan, Myanmar and China. Trudy Russkogo Entomologicheskogo Obschchestva 77: 123–131.

Kalawate AS (2018) A preliminary study on the dung beetles of the Northern Western Ghats, Maharashtra, India. Journal of Threatened Taxa 10 (2): 11316–11331. https://doi.org/10.11609/jott.3844.10.2.11316-11331

Karimbumkara SN, Priyadarsanan DR (2013) Fauna of Karnataka, State Fauna Series. Zoological Survey of India 21: 173–178.

Karimbumkara SN, Priyadarsanan DR (2016) Report of dung beetles (Scarabaeidae: Scarabaeinae) attracted to unconventional resources, with the description of three new species. Entomon 41 (4): 265–282.

Löbl I and Löbl D (2016) Catalogue of Palaearctic Coleoptera, revised and updated edition. Vol. 3. Brill Publishers, Leiden, 983 pp.

Mittal I (1993) Natural manuring and soil conditioning by dung beetles. Tropical Ecology 34: 150–159.

Moczek A (2011) Evolution and development: *Onthophagus* beetles and the evolutionary developmental genetics of innovation, allometry, and plasticity. In: Simmons LW, Ridsdill-Smith TJ (Eds) Ecology and evolution of dung beetles. Blackwell Publishing, Oxford, 126–151.

Muhaimin AMD, Hazmi IR, Yaakop S (2015) Colonization of dung beetles (Coleoptera: Scarabaeidae) of smaller body size in the Bangi Forest Reserve, Selangor, Malaysia: a model sampling site for a secondary forest area. Pertanika Journal of Tropical Agricultural Science 38 (4): 519–532.

Nichols E, Spector S, Louzada J, Larsen T, Amezquita S, Favila ME (2008) Ecological functions and ecosystem services provided by Scarabaeinae dung beetles. Biological Conservation 141: 1461–1474. https://doi.org/10.1016/j.biocon.2008.04.011

Niino M, Hosaka T, Kon M, Ochi T, Yamada T, Okuda T (2014) Diel flight activity and habitat preference of dung beetles (Coleoptera: Scarabaeidae) in Peninsular Malaysia. Raffles Bulletin of Zoology 62: 795–804.

Nithya S, Thomas SK (2012) New species, new synonym, and redescription of *Onthophagus* (Coleoptera: Scarabaeidae: Scarabaeinae) from the Western Ghats, India. Zootaxa 3526: 53–58. https://doi.org/10.11646/zootaxa.3526.1.5

Oppenheimer JR (1977) Ecology of dung beetles (Scarabaeidae: Coprinae) in two villages of West Bengal. Records of the Zoological Survey of India 72: 389–398.

Philips TK (2011) The evolutionary history and diversification of dung beetles. In: Simmons LW, Ridsdill-Smith TJ (Eds) Ecology and evolution of dung beetles. Wiley-Blackwell, Oxford, 21–46.

Philips TK (2016) Phylogeny of the Oniticellini and Onthophagini dung beetles (Scarabaeidae, Scarabaeinae) from morphological evidence. ZooKeys 579: 9–57. https://doi.org/10.3897/zookeys.579.6183

Saha S, Raychaudhuri D (2000) Scavanger beetles (Scarabaeidae: Coprinae) of Buxa Tiger Reserve, Jalpaiguri, West Bengal. Insect Environment 6 (1): 43–44.

Sarkar SK, Saha S, Raychaudhuri D (2010) Further additions to the scarab beetles of Buxa Tiger Reserve, Jalpaiguri, West Bengal. Bionotes 12 (4): 131–132.

Sarkar SK, Saha S, Raychaudhuri D (2015) On the taxonomy of Scarabaeine fauna (Coleoptera: Scarabaeidae) of Buxa Tiger Reserve (BTR), West Bengal, India. Munis Entomology & Zoology 10 (1): 18–48.

Sathiandran N, Thomas KS, Flemming AT (2015) An illustrated checklist of dung beetles (Coleoptera: Scarabaeidae) from the PeriyarTiger Reserve, Kerala, India. Journal of Threatened Taxa 7 (15): 8250–8258. https://doi.org/10.11609/jott.2466.7.15.8250-8258

Scheuern J (1995) Taxonomie, sexual Dimorphismus und neubeschreibungen orientalischer *Onthophagus*-Arten unter Besonderer Berucksichtigung des Subgenus *Colobonthophagus*. Entomologica Basiliensia 18: 413–453.

Scheuern J (1996) Neue und verkannte *Onthophagus*-Artenaus Orientalischen Region. Stuttgarter Baitragezur Naturkunde Serie A (Biologie) 542: 1–20.

Schoolmeesters P (2019) Catalogue of Life: 2019 annual checklist, world Scarabaeidae database. https://www.catalogueoflife.org/col/details/database/id/27. Accessed on: 2019-13-09.

Schoolmeesters P, Thomas SK (2006) A new *Onthophagus* species from Kerala, India (Coleoptera: Scarabaeidae, Scarabaeinae). Phegea 34 (2): 73–75.

Sewak R (1985) On a collection of dung beetles (Coleoptera: Scarabaeidae: Coprinae) from Gujarat, India. Oikasay 2 (2): 33–35.

Sewak R (1986) On a collection of dung beetles (Coleoptera: Scarabaeidae: Coprinae) from Rajasthan, India. Oikasay 3 (1): 11–15.

Sewak R (1991) Dung beetles (Coleoptera: Scarabaeidae: Coprinae) from five districts of western Uttar Pradesh. Oikasay 8 (1–2): 25–27.

Sewak R (2004a) Insecta: Coleoptera: Scarabaeidae: Coprinae (Dung beetles). Zoological Survey of India, Fauna of Gujarat, State Fauna Series 8 (2): 105–125.

Sewak R (2004b) Dung beetles (Coleoptera: Scarabaeidae: Coprinae) of India with special reference to Arunachal Pradesh, Uttar Pradesh and Rajasthan. In: Gupta RK (Ed.) Advancements in insect biodiversity. Agrobios (India) Publishers, Jodhpur, 249–297.

Sewak R (2006) Coleoptera: Scarabaeidae: Coprinae (dung beetles). Zoological Survey of India, Fauna of Arunachal Pradesh, State Fauna Series 13 (2): 191–224.

Sewak R (2009a) Dung beetles (Coleoptera: Scarabaeidae: Coprinae) of Thar Desert of Gujrat. Records of the Zoological Survey of India, Occasional Paper 295: 1–48.

Sewak R (2009b) Dung beetles (Coleoptera: Scarabaeidae: Coprinae) of Rajasthan. Records of the Zoological Survey of India, Occasional Paper 296: 1–106.

Sewak R (2010) Fauna of Ranthambhore National Park, Rajasthan. Zoological Survey of India Conservation Area Series 43: 93–118.

Siddiqui H, Ahmedand Z, Khatri I (2014) Distributional notes and new records for the dung beetles (Coleoptera: Scarabaeidae: Scarabaeinae) of Pakistan. Pakistan Journal of Zoology 46 (2): 295–307.

Singh AP, Mahajan S, Uniyal VP, Mondal R (2017) First report on Scarabaeid (Coleoptera) fauna of Sahaspur, Uttarakhand. Journal of Entomology and Zoology Studies 5 (6): 17–22.

Smith BTA (2006) A review of the family-group names for the superfamily Scarabaeoidea (Coleoptera) with corrections to nomenclature and a current classification. Coleopterists Society Monograph 5: 144–204. https://doi.org/10.1649/0010-065X(2006)60[144:AROTFN]2.0.CO;2

Tarasov S (2010) Seven new synonyms within the genus *Onthophagus* (Coleoptera: Scarabaeidae) from the Oriental Region. Zootaxa 2566: 45–48. https://doi.org/10.11646/zootaxa.2566.1.4

Tarasov SI, Genier F (2015) Innovative bayesian and parsimony phylogeny of dung beetles (Coleoptera, Scarabaeidae, Scarabaeinae) enhanced by ontology-based partitioning of morphological characters. PloS ONE 10 (3): 1–86. https://doi.org/10.1371/journal.pone.0116671

Tarasov SI, Kabakov ON (2010) Two new species of *Onthophagus* (Coleoptera: Scarabaeidae) from Indochina, with a discussion of some problems with the classification of *Serrophorus* and similar subgenera. Zootaxa 2344: 17–28. https://doi.org/10.11646/zootaxa.2344.1.2

Tarasov SI, Solodovnikov AY (2011) Phylogenetic analyses reveal reliable morphological markers to classify mega-diversity in Onthophagini dung beetles (Coleoptera: Scarabaeidae: Scarabaeinae). Cladistics 27: 490–528. https://doi.org/10.1111/j.1096-0031.2011.00351.x

Thomas SK, Nithya S, Vinod KV (2011) Faunal survey, endemism and possible species loss of Scarabaeinae (Coleoptera: Scarabaeidae) in the western slopes of the moist South Western Ghats, south India. Zootaxa 2830: 29–38.http://dx.doi.org/10.11646/zootaxa.2830.1.3

Wiedemann CRW (1823) Zweihundertneue Käfer von java, Bengalen und dem Vorgebirge der guten Hoffnung. Akademische Buchhandlung, Kiel Zoologische Magazin 2 (1): 1–133.

Yokoyama K, Kai H, Koga T, Aibe T (1991) Nitrogen mineralization and microbial populations in cow dung, dung balls and underlying soil affected by paracoprid dung beetles. Soil Biology and Biochemistry 23: 649–653. https://doi.org/10.1016/0038-0717(91)90078-X

Appendix

Table A1. Checklist of *Onthophagus* species recorded until now from different regions of India. List based on published literature and examination of specimens kept at ZSI museum. The checklist contains scientific names of the species, their geographical distribution, with the references containing the distributional records.

No.	Species	Distribution		References
		India	Elsewhere	
1	*Onthophagus abacus* Boucomont, 1921	Haryana, Madhya Pradesh, Maharastra, Odisha, Puducherry, Tamil Nadu, Uttar Pradesh, West Bengal	Bangladesh	Boucomont 1921; Arrow 1931; Chandra and Gupta 2012a, 2012d; Gupta et al. 2014
2	*Onthophagus abreui* Arrow, 1931	Bihar, Chhattisgarh, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Uttarakhand, Uttar Pradesh	Pakistan	Arrow 1931; Chandra 2000; Chandra and Ahirwar 2007; Chandra et al. 2012c; Chandra and Gupta 2012c, 2012d ; Chandra and Gupta 2013; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014; Gajendra and Prasad 2016
3	*Onthophagus* (*Colobonthophagus*) *aenescens* (Wiedemann, 1823)	Bihar, Himachal Pradesh, Tripura, Uttar Pradesh, Uttarakhand, West Bengal	Bangladesh, China, Nepal, Pakistan	Wiedemann 1823; Arrow 1931; Chatterjee and Biswas 2000; Chandra 2005; Chandra et al. 2012c
4	*Onthophagus agaricophilus* Arrow, 1931	Uttarakhand	No record found	Arrow 1931

No.	Species	Distribution		References
		India	Elsewhere	
5	*Onthophagus* (*Coloboniphagus*) *agnus* Gillet, 1925	Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, West Bengal	No record found	Arrow 1931; Chandra 2000; Chandra and Ahirwar 2007; Sewak 2009a, 2009b, 2010; Chandra and Gupta 2012c, 2012d; Jadhav and Sharma 2012; Chandra and Gupta 2013; Karimbumkara and Priyadarsanan 2013; Bharamal et al. 2014; Gupta et al. 2014; Gajendra and Prasad 2016; Kalawate 2018
6	*Onthophagus* (*Furconthophagus*) *amicus* (Gillet, 1925)	Assam, Karnataka, Nagaland, Sikkim, Uttarakhand, West Bengal	Nepal	Arrow 1931; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013
7	*Onthophagus amphicoma* Boucomont, 1914	Kerala, Karnataka, Puducherry, Tamil Nadu	No record found	Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015
8	*Onthophagus amphinasus* Arrow, 1931	Maharashtra, Karnataka, Kerala,Tamil Nadu	No record found	Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015
9	*Onthophagus amphioxus* Arrow, 1931	Karnataka, Tamil Nadu	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013
10	*Onthophagus* (*Onthophagus*) *andrewesi* Arrow, 1931	Kerala, Karnataka, Maharasthra, Tamil Nadu	No record found	Arrow 1931; Biswas and Chatterjee 1986b; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015
11	*Onthophagus* (*Sunenaga*) *anguliceps* Boucomont, 1914	Arunachal Pradesh, Assam, Meghalaya, Mizoram, Sikkim, West Bengal	Bhutan, China, Myanmar, Taiwan	Arrow 1931; Balthasar 1963; Biswas and Chatterjee 1986a
12	*Onthophagus arboreus* Arrow, 1931	Bihar, Karnataka, Kerala, Uttarakhand	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013, 2016
13	*Onthophagus* (*Coloboniphagus*) *armatus* Blanchard, 1853	Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Madhya Pradesh, Odisha, Rajasthan, Tripura	China, Iran, Myanmar, Philippines, Taiwan, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Chatterjee and Biswas 2000; Sewak 2006, 2009a, 2009b; Chandra and Gupta 2012a, 2013; Sarkar et al. 2015; Gajendra and Prasad 2016
14	*Onthophagus arunachalensis* Biswas & Chatterjee, 1985	Arunachal Pradesh	No record found	Biswas and Chatterjee 1985; Sewak 2006
15	*Onthophagus* (*Coloboniphagus arunensis* Scheuern, 1995	Sikkim	Nepal	Scheuern 1995
16	*Onthophagus* (*Serrophorus*) *atropolitus* D'Orbigny, 1902	Assam, Haryana, Himachal Pradesh, Meghalaya, Rajasthan, Sikkim, Uttarakhand, West Bengal,	Myanmar, Taiwan, Vietnam	Arrow 1931; Chandra 2005; Sewak 2009a, 2009b; Chandra et al. 2012c
17	*Onthophagus* (*Sunenaga*) *avocetta* Arrow, 1933	Assam, Sikkim	Borneo, Indonesia, Java, Malaysia, Myanmar, Thailand	Arrow 1933
18	*Onthophagus balawaicus* Scheuern, 1995	West Bengal	Nepal	Scheuern 1995
19	*Onthophagus beesoni* Arrow, 1931	Bihar, Uttarakhand, West Bengal	Bangladesh	Arrow 1931
20	*Onthophagus* (*Coloboniphagus*) *bengalensis* Harold, 1886	Haryana, Karnataka, Madhya Pradesh, Rajasthan,Tamil Nadu, Uttarakhand	No record found	Arrow 1931; Chandra 2005; Sewak 2009a, 2009b; Chandra and Gupta 2011a, 2012c, 2012d ; Chandra et al. 2012c; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014
21	*Onthophagus bengali* Gordon & Oppenheimer, 1977	Arunachal Pradesh, West Bengal	No record found	Gordon and Oppenheimer 1977; Biswas and Chatterjee 1985; Sewak 2006
22	*Onthophagus* (*Paraphanaeomorphus*) *bifasciatus* (Fabricius, 1781)	Assam, Bihar, Haryana, Jharkand, Karnataka, Kerala, Maharasthra, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand, West Bengal	Myanmar, Nepal	Arrow 1931; Gordon and Oppenheimer 1977; Oppenheimer 1977; Biswas and Chatterjee 1986b; Chandra 2009; Chandra et al. 2012c; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015; Anto and Vinod 2017
23	*Onthophagus bisectus* Arrow, 1931	Tamil Nadu	No record found	Arrow 1931; Chandra 2009
24	*Onthophagus* (*Coloboniphagus*) *bison* Boucomont, 1919	Arunachal Pradesh, West Bengal	Myanmar, Thailand	Arrow 1931; Sewak 2006; Sarkar et al. 2015; Schoolmeesters 2019
25	*Onthophagus brevicollis* Arrow, 1907	Chhatisgarh, Madhya Pradesh, Karnataka,Tamil Nadu,	No record found	Arrow 1931; Chandra 2000, 2009; Chandra and Ahirwar 2007; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013
26	*Onthophagus bronzeus* Arrow, 1907	Karnataka, Kerala, Maharashtra, Tamil Nadu	No record found	Arrow 1931; Biswas and Chatterjee 1991; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015
27	*Onthophagus brutus* Arrow, 1931	Kerala, West Bengal	Bangladesh, China, Myanmar, Thailand	Arrow 1931; Thomas et al. 2011; Schoolmeesters 2019
28	*Onthophagus caesariatus* Boucomont, 1921	Kerala	No record found	Arrow 1931; Thomas et al. 2011
29	*Onthophagus* (*Paraphanaeomorphus*) *carinensis* Boucomont, 1914	Rajasthan	China, Myanmar	Arrow 1931; Sewak 2009a, 2009b
30	*Onthophagus castetsi* Lansberge, 1887	Kerala, Tamil Nadu, Uttar Pradesh	No record found	Arrow 1931; Biswas and Chatterjee 1986b; Chandra 2009; Sathiandran et al. 2015
31	*Onthophagus* (*Micronthophagus*) *cavia* Boucomont, 1914	Karnataka, Kerala, Maharastra, Tamil Nadu	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013, 2016; Sathiandran et al. 2015
32	*Onthophagus centricornis* (Fabricius, 1798)	Arunachal Pradesh, Bihar, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttarkhand	Afghanistan, Japan, Myanmar, Pakistan, Sri Lanka	Arrow 1931; Biswas and Chatterjee 1985, 1986a; Chandra 2000, 2005; Chandra and Ahirwar 2007; Chandra et al. 2012c; Chandra and Gupta 2012d; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013, 2016; Schoolmeesters 2019
33	*Onthophagus* (*Onthophagus*) *cervus* (Fabricius, 1798)	Andaman and Nicobar Islands, Arunachal Pradesh, Chhattisgarh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Puducherry, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal	Pakistan, South Arabia, Sri Lanka, Vietnam	Arrow 1931; Biswas and Chatterjee 1986a; Chandra 2000; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2006, 2009a, 2009b, 2010; Jadhav and Sharma 2012; Chandra et al. 2012b; Chandra and Gupta 2012c, 2012d, 2013; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013, 2016; Sathiandran et al. 2015; Gajendra and Prasad 2016;

No.	Species	Distribution		References
		India	Elsewhere	
34	*Onthophagus* (*Onthophagus*) *ceylonicus* Harold, 1859	Karnataka, Rajasthan, West Bengal	Sri Lanka	Harold 1859; Arrow 1931; Sewak 2006, 2009a
35	*Onthophagus chrysurus* Arrow, 1931	Assam, Karnataka	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013
36	*Onthophagus* (*Onthophagus*) *circulifer* Arrow, 1931	Assam, Haryana, Jammu and Kashmir, Maharasthra, Meghalaya, Punjab, Sikkim, Uttarakhand, Uttar Pradesh, West Bengal	Myanmar	Arrow 1931; Chandra et al. 2012a, 2012c; Karimbumkara and Priyadarsanan 2013, 2016
37	*Onthophagus coeruleicollis* Arrow, 1917	Andrhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Odisha	No record found	Arrow 1931; Biswas and Chatterjee 1991; Jadhav and Sharma 2012; Karimbumkara and Priyadarsanan 2013, 2016; Gupta et al. 2014
38	*Onthophagus cognatus* Boucomont, 1921	Arunachal Pradesh, Assam, Manipur	Laos, Myanmar, Thailand	Biswas and Chatterjee 1985; Sewak 2006; Tarasov 2010
39	*Onthophagus* (*Paraphanaeomorphus*) *comottoi* Lansberge, 1885	Karnataka	Myanmar	Arrow 1931; Karimbumkara and Priyadarsanan 2013
40	*Onthophagus compactus* Arrow, 1933	Haryana, Uttarakhand	No record found	Chandra et al. 2012a, 2012c
41	*Onthophagus* (*Altonthophagus*) *concolor* Sharp, 1878	Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttarakhand	Afghanistan, Pakistan	Arrow 1931; Chandra 2009; Sewak 2009a, 2009b
42	*Onthophagus* (*Palaeonthophagus*) *conspersus* Reitter, 1892	Jammu and Kashmir	Afghanistan, Azerbaijan, Iran, Tajikistan, Turkmenistan	Bezděk and Hájek 2013; Löbl and Löbl 2016
43	*Onthophagus coorgensis* Arrow, 1931	Karnataka, Kerala, Tamil Nadu	No record found	Arrow 1931
44	*Onthophagus* (*Onthophagiellus*) *crassicollis* Boucomont, 1913	Arunachal Pradesh, Rajasthan	China, Iran, Malaysia, Myanmar, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006, 2009a, 2009b; Muhaimin et al. 2015; Schoolmeeters 2019
45	*Onthophagus* (*Altonthophagus*) *cupreiceps* Arrow, 1907	Sikkim	Bhutan, China, Nepal	Arrow 1931
46	*Onthophagus* (*Colobonthophagus*) *dama* (Fabricius, 1798)	Arunachal Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal	Bhutan, China, Nepal, Sri Lanka	Arrow 1931; Biswas and Chatterjee 1985, 1986a, 1991; Chandra 2000, 2005; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2006; Chandra and Gupta 2011a, 2012c, 2012d, 2012e, 2013; Jadhav and Sharma 2012; Chandra et al. 2012a, 2012b, 2012c; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013, 2016; Bharmal et al. 2014; Gupta et al. 2014; Sarkar et al. 2015; Sathiandran et al. 2015; Gajendra and Prasad 2016; Singh et al. 2017; Kalawate 2018
47	*Onthophagus deccanensis* Frey, 1962	Maharashtra	No record found	Frey 1962
48	*Onthophagus deflexicollis* Lansberge, 1883	Arunachal Pradesh, Assam, Kerala, Madhya Pradesh, Odisha, Sikkim, Uttarakhand, West Bengal	Australia, Bangladesh, Indonesia, Laos, Myanmar, Malaysia, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Chandra and Ahirwar 2007; Sathiandran et al. 2015
49	*Onthophagus devagiriensis* Schoolmeesters & Thomas, 2006	Kerala	No record found	Schoolmeesters and Thomas 2006
50	*Onthophagus* (*Sunenaga*) *digitatus* Arrow, 1931	Rajasthan, Sikkim	No record found	Arrow 1931; Sewak 2009a, 2009b
51	*Onthophagus* (*Gibbonthophagus*) *dubernardi* Boucomont,1914	Himachal Pradesh, Karnataka, Sikkim, West Bengal,	China, Myanmar, Vietnam,	Arrow 1931; Chandra 2005; Sewak 2005; Karimbumkara and Priyadarsanan 2013
52	*Onthophagus* (*Gibbonthophagus*) *duporti* Boucomont, 1914	Arunachal Pradesh, Bihar, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh,Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal	China, Laos, Myanmar, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Chandra 2005, 2009; Sewak 2006; Chandra et al. 2012c; Chandra and Gupta 2012d, 2012e; Karimbumkara and Priyadarsanan 2013, 2016; Sathiandran et al. 2015; Schoolmeeters 2019
53	*Onthophagus* (*Trichonthophagus*) *dynastoides* Arrow, 1931	Gujrat, Rajasthan	Sri Lanka	Arrow 1931; Sewak 2009a, 2009b
54	*Onthophagus elongatus* Frey, 1954	Kerala,Tamil Nadu	No record found	Frey 1954; Thomas et al. 2011
55	*Onthophagus* (*Indonthophagus*) *ensifer* Boucamont, 1914	Andhra Pradesh, Arunachal Pradesh, Bihar, Gujarat, Karnataka, Kerala, Rajasthan, Tamil Nadu, Uttar Pradesh	Pakistan	Arrow 1931; Biswas and Chatterjee 1986a, 1986b; Sewak 2006;2009a, 2009b, 2010; Chandra 2009; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013, 2016; Sathiandran et al. 2015; Anto and Vinod 2017
56	*Onthophagus* (*Colobonthophagus*) *ephippioderus* Arrow, 1907	Gujarat, Karnataka, Kerala, Maharastra, Rajasthan, Tamil Nadu	No record found	Arrow 1931; Chandra 2009; Sewak 2009a and b; Karimbumkara and Priyadarsanan 2013
57	*Onthophagus expansicornis* Bates, 1891	Himachal Pradesh, Punjab, Uttarakhand	Afghanistan	Arrow 1931; Chandra 2005; Chandra et al. 2012a, 2012c
58	*Onthophagus exquisitus* Arrow, 1931	Uttarakhand, West Bengal	Bangladesh	Arrow 1931; Schoolmeesters 2019
59	*Onthophagus falcifer* Harold, 1880	Karnataka, Sikkim, West Bengal	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013; Sarkar et al. 2015
60	*Onthophagus falsus*Gillet, 1925	Arunachal Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Meghalaya, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh	Afghanistan, Bangladesh, Kenya, Pakistan	Arrow 1931; Chandra 2005; Sewak 2009a, 2009b Chandra et al. 2012a, 2012c; Karimbumkara and Priyadarsanan 2013; Anto and Vinod 2017
61	*Onthophagus fasciatus* Boucomont, 1924	Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Tamil Nadu, Tripura, Uttarakhand, West Bengal	Bangladesh	Arrow 1931; Biswas and Chatterjee 1986b; Chatterjee and Biswas 2000; Chandra 2000, 2005, 2009; Chandra and Ahirwar 2005a, 2007; Chandra and Gupta 2012d; Karimbumkara and Priyadarsanan 2013, 2016; Sathiandran et al. 2015

No.	Species	Distribution		References
		India	Elsewhere	
62	*Onthophagus favrei* Boucomont, 1914	Karnataka, Kerala, Maharastra, Tamil Nadu	Sri Lanka	Anitha Rani and Sanjayan 2013; Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan 2013;Sathiandran et al. 2015
63	*Onthophagus felix* Arrow, 1931	Jharkhand	No record found	Arrow 1931
64	*Onthophagus* (*Matashia*) *fossor*Arrow, 1931	Sikkim	Malaysia	Arrow 1931
65	*Onthophagus frankenbergeri* Balthasar, 1933	Puducherry, Tamil Nadu	No record found	Balthasar 1933; Bezděk and Hájek 2013
66	*Onthophagus* (*Paraphanaeomorphus*) *frugivorus* Arrow, 1931	Assam, Gujarat, Karnataka, Meghalaya, Sikkim, Rajasthan	Myanmar, Vietnam	Arrow 1931; Chandra 2005; Sewak 2009a, 2009b; Karimbumkara and Priyadarsanan 2013, 2016
67	*Onthophagus furcicollis* Arrow, 1931	Arunachal Pradesh, Assam, Haryana, Himachal Pradesh, Rajasthan, Sikkim, Uttarakhand, West Bengal	Bhutan, Nepal	Arrow 1931; Biswas and Chatterjee 1985; Chandra 2005; Sewak 2006, 2009a, 2009b; Chandra et al. 2012c; Karimbumkara and Priyadarsanan 2016
68	*Onthophagus furcillifer* Bates, 1891	Assam, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Kaschmir, Kerala, Madhya Pradesh, Punjab, Uttarakhand, Uttar Pradesh	Nepal	Arrow 1931; Biswas and Chatterjee 1986a; Chandra 2000, 2005; Chandra and Ahirwar 2007; Chandra et al. 2012c; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015; Anto and Vinod 2017
69	*Onthophagus furculus* (Fabricius, 1798)	Odisha, Puducherry	Sri Lanka	Arrow 1931; Biswas and Chatterjee 1991;
70	*Onthophagus fuscopunctatus* (Fabricius, 1798)	Gujarat, Rajasthan, Tamil Nadu	Sri Lanka	Arrow 1931; Chandra 2009; Sewak 2009a, 2009b
71	*Onthophagus* (*Paraphanaeomorphus*) *gagates* Hope, 1831	Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Punjab, Uttarakhand, Uttar Pradesh, West Bengal	Bhutan, China, Nepal, Taiwan, Vietnam	Arrow 1931; Chandra 2005; Chandra et al. 2012a, 2012b, 2012c; Chandra and Gupta 2012b; Schoolmeesters 2019
72	*Onthophagus* (*Paraphanaeomorphus*) *gagatoides* Kabakov, 2006	Himachal Pradesh, Uttarakhand	No record found	Kabakov 2006
73	*Onthophagus gangeticus* Gillet, 1925	Bihar, West Bengal	Bangladesh	Arrow 1931; Schoolmeesters 2019
74	*Onthophagus gemma* (Sharp, 1875)	Tamil Nadu, West Bengal	Sri Lanka	Arrow 1931; Chandra 2009
75	*Onthophagus germanus* Gillet, 1927	Sikkim, Uttarakhand, West Bengal,	No record found	Arrow 1931
76	*Onthophagus gracilipes* Boucomont, 1914	Karnataka	China, Myanmar, Vietnam,	Karimbumkara and Priyadarsanan 2013
77	*Onthophagus gratus* Arrow, 1931	Bihar, Chhattisgarh, Himachal pradesh, Jharkhand, Karnataka, Madhya Pradesh, Tamil Nadu, Uttarakhand	No record found	Arrow 1931; Chandra and Gupta 2012a, 2012d; Chandra et al. 2012c;
78	*Onthophagus griseosetosus* Arrow, 1931	Chhattisgarh, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra,Tamil Nadu, Uttarakhand	No record found	Arrow 1931; Chandra 2000; Chandra and Ahirwar 2005b; Jadhav and Sharma 2012; Chandra et al. 2012a, 2012b, 2012c; Chandra and Gupta 2012d; Gupta et al. 2014; Karimbumkara and Priyadarsanan 2013
79	*Onthophagus* (*Micronthophagus*) *gulo* Arrow, 1931	Karnataka, Madhya Pradesh, Maharasthra, Rajasthan	No record found	Arrow 1931; Chandra 2000; Chandra and Ahirwar 2007; Jadhav and Sharma 2012; Karimbumkara and Priyadarsanan 2013
80	*Onthophagus hamaticeps* Arrow, 1931	Arunachal Pradesh, Punjab, Rajasthan, Uttarakhand	No record found	Arrow 1931; Sewak 2009a, 2009b
81	*Onthophagus hemipygus* Frey, 1964	Odisha	No record found	Frey 1964
82	*Onthophagus* (*Colobonthophagus*) *hindu* Arrow, 1931	Andhra Pradesh, Chhattisgarh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra	Afghanistan, Pakistan, Sri Lanka	Arrow 1931; Chandra and Gupta 2011a, 2011b, 2012c, 2012d, 2013; Chandra et al. 2012b; Karimbumkara and Priyadarsanan 2013, 2016; Gupta et al. 2014; Siddiqui et al. 2014; Gajendra and Prasad 2016; Kalawate 2018
83	*Onthophagus* (*Paraphanaeomorphus*) *hingstoni* Arrow, 1931	Arunachal Pradesh, Sikkim	No record found	Arrow 1931; Chandra and Gupta 2012b
84	*Onthophagus* (*Micronthophagus*) *hystrix* Boucomont, 1914	Andhra Pradesh, Bihar, Haryana, Madhya Pradesh, Maharasthra, Karnataka, Kerala, Odisha, Tamil Nadu, Uttarakhand, Uttar Pradesh	Myanmar, Sri Lanka	Arrow 1931; Biswas and Chatterjee 1991; Chandra 2000; Chandra and Ahirwar 2007; Jadhav and Sharma 2012; Chandra et al. 2012a, 2012c; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013
85	*Onthophagus* (*Paraphanaeomorphus*) *insignicollis* Frey, 1954	Jharkhand, Maharashtra	No record found	Frey 1954
86	*Onthophagus jwalae* Karimbumkara & Priyadarsanan, 2016	Kerala	No record found	Karimbumkara and Priyadarsanan 2016
87	*Onthophagus kanarensis* Arrow, 1931	Karnataka, Maharasthra	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013
88	*Onthophagus kapuri* Endrödi, 1974	Maharashtra	No record found	Endrödi 1974
89	*Onthophagus kashmirensis* Balthasar, 1966	Jammu and Kashmir	No record found	Bezděk and Hájek 2013
90	*Onthophagus kchatriya* Boucomont, 1914	Karnataka, Kerala, Odisha, Tamil Nadu	No record found	Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Sathiandran et al.2015
91	*Onthophagus keralensis* Frey, 1975	Kerala	No record found	Frey 1975; Thomas et al.2011
92	*Onthophagus keralicus* Biswas, 1986	Kerala	No record found	Biswas and Chatterjee 1986
93	*Onthophagus* (*Matashia*) *kuluensis* Bates, 1891	Arunachal Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kaschmir, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh	China, Nepal	Arrow 1931; Sewak 1986, 2006, 2009a, 2009b, 2010; Chandra 2005; Chandra and Gupta 2012a, 2012b; Chandra et al. 2012c
94	*Onlhophagus kumaonensis* Arrow, 1931	Himachal Pradesh, Punjab	No record found	Arrow 1931; Chandra 2005

No.	Species	Distribution		References
		India	Elsewhere	
95	*Onthophagus laborans* Arrow, 1931	Madhya Pradesh, Maharasthra, Karnataka	No record found	Arrow 1931; Chandra 2000; Chandra and Ahirwar 2007; Jadhav and Sharma 2012; Chandra and Gupta 2012c, 2012d, 2012e; Karimbumkara and Priyadarsanan 2013, 2016
96	*Onthophagus laevigatus* (Fabricius, 1798)	Karnataka, Odisha	Sri Lanka	Arrow 1931; Biswas and Chatterjee 1991; Karimbumkara and Priyadarsanan 2013
97	*Onthophagus* (*Serrophorus*) *laevis* Harold, 1880	Arunachal Pradesh, Kerala, Sikkim, Uttarakhand, Uttar Pradesh, West Bengal	China, Indonesia, Myanmar, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Niino et al. 2014; Sathiandran et al. 2015; Schoolmeesters 2019
98	*Onthophagus lapillus* Arrow, 1931	Haryana, Himachal Pradesh, Punjab, Sikkim, Uttarakhand, West Bengal,	No record found	Arrow 1931; Chandra 2005; Sewak 2005
99	*Onthophagus lemniscatus* Gillet, 1924	Karnataka, Kerala, Tamil Nadu	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013
100	*Onthophagus* (*Furconthophagus*) *lilliputanus* Lansberge, 1883	Chandigarh, Himachal Pradesh, Karnataka, Kashmir, Odisha, Tamil Nadu, Uttarakhand	Myanmar, Philippines	Arrow 1931; Chandra 2005, 2009; Sewak 2005; Karimbumkara and Priyadarsanan 2013; Niino et al. 2014
101	*Onthophagus ludio* Boucomont, 1914	Andhra Pradesh, Chhattisgarh, Karnataka, Maharashtra, Tamil Nadu	Sri Lanka	Arrow 1931; Chandra 2009; Jadhav and Sharma 2012; Chandra and Gupta 2013; Karimbumkara and Priyadarsanan 2013; Gajendra and Prasad 2016
102	*Onthophagus* (*Gibbonthophagus*) *luridipennis* Boheman, 1858	Arunachal Pradesh, Assam, Karnataka, Tripura, Uttarakhand, Uttar Pradesh	Bangladesh, China, Indonesia, Myanmar, Philippines, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Chatterjee and Biswas 2000; Chandra 2005; Sewak 2006; Chandra et al. 2011; Karimbumkara and Priyadarsanan 2013, 2016; Schoolmeesters 2019
103	*Onthophagus madoqua* Arrow, 1931	Gujarat, Karnataka, Kerala, Rajasthan, Tamil Nadu	Indonesia, Vietnam	Arrow 1931; Chandra 2005; Sewak 2009a; Karimbumkara and Priyadarsanan 2013
104	*Onthophagus malabarensis* Boucomont, 1919	Kerala, Maharashtra, Uttar Pradesh,	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2016
105	*Onthophagus* (*Macronthophagus*) *manipurensis* Arrow, 1907	Arunachal Pradesh, Assam, Kerala, Manipur, Meghalaya	China, Thailand, Myanmar	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Sathiandran et al. 2015; Schoolmeesters 2019
106	*Onthophagus* (*Palaeonthophagus*) *marginalis* (Gebler, 1817)	Chandigarh, Himachal Pradesh, Jammu and Kashmir, Uttarakhand	Afghanistan, Armenia, Australia, Bulgaria, China, Greece, Iraq, Israel, Kazkistan, Korea, Mongolia, Morocco, Portugal, Romania, Russia, Spain, Syria, Tajakistan, Turkey, Turkmenistan	Arrow 1931; Chandra 2005; Chandra et al. 2012a, 2012c
107	*Onthophagus* (*Onthophagus*) *mauritii* Boucomont, 1919	Arunachal Pradesh, Bihar, Karnataka, Maharastra, Tamil Nadu	No record found	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Chandra 2009; Karimbumkara and Priyadarsanan 2013
108	*Onthophagus metalliceps* Arrow, 1931	Arunachal Pradesh, Bihar, Karnataka, Maharastra, Tamil Nadu	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013; Schoolmeesters 2019
109	*Onthophagus mirandus* Arrow, 1931	Assam, Himachal Pradesh, Punjab, Rajasthan, Uttarakhand	No record found	Arrow 1931; Sewak 2009b
110	*Onthophagus* (*Indonthophagus*) *mopsus* (Fabricius, 1792)	Bihar, Chandigarh, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Punjab, Rajasthan, Sikkim, Uttarakhand, Uttar Pradesh, West Bengal	Afghanistan, Pakistan	Arrow 1931; Chandra 2005; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013; Singh et al. 2017
111	*Onthophagus nagpurensis* Arrow, 1931	Jharkhand	No record found	Arrow 1931
112	*Onthophagus* (*Gibbonthophagus*) *nasalis* Arrow, 1931	Haryana, Rajasthan, Uttarakhand	Nepal	Arrow 1931; Sewak 2009a, 2009b; Chandra and Gupta 2012a; Chandra et al. 2012c
113	*Onthophagus necrophagus* Arrow, 1931	Uttarakhand	No record found	Arrow 1931
114	*Onthophagus nefarius* Balthasar, 1963	Jharkhand	Nepal	Balthasar 1963
115	*Onthophagus negligens* Walker, 1858	Karnataka, Kerala, Tamil Nadu	Sri Lanka	Arrow 1931; Chandra 2005; Karimbumkara and Priyadarsanan 2013; Anto and Vinod 2017
116	*Onthophagus* (*Colobonthophagus*) *neocolobus* Scheuern, 1996	Karnataka	No record found	Scheuern 1996
117	*Onthophagus nicobaricus* Biswas Chatterjee & Sengupta, 1999	Nicobar Islands	No record found	Biswas; Chatterjee and Sengupta 1999
118	*Onthophagus* (*Macronthophagus*) *nilgirensis* Gillet, 1922	Arunachal Pradesh, Kerala, Tamil Nadu	No record found	Arrow 1931; Sewak 2006
119	*Onthophagus* (*Colobonthophagus*) *occipitalis* Lansberge, 1885	Arunachal Pradesh, Rajasthan	Myanmar, Sri Lanka	Arrow 1931; Sewak 2006; Sewak 2009a, 2009b
120	*Onthophagus* (*Micronthophagus*) *ochreatus* D'Orbigny, 1897	Gujrat	Morocco, Niger, Oman, Pakistan, Saudi Arabia, Senegal, Somalia, Sri Lanka	Arrow 1931; Sewak 2009a; Schoolmeesters 2019
121	*Onthophagus octogonus* Frey, 1962	Assam	No record found	Frey 1962
122	*Onthophagus* (*Micronthophagus*) *oculatus* Arrow, 1931	Gujarat, Kerala, Puducherry, Rajasthan, Tamil Nadu	Sri Lanka	Arrow 1931; Sewak 2009a, 2009b
123	*Onthophagus orientalis* Harold, 1868	Arunachal Pradesh, Assam, Bihar, Chhattisgarah, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Sikkim, Uttarakhand, West Bengal	Afghanistan, Bangladesh, Cambodia, China, Madagascar, Myanmar, Pakistan, Soudi Arabia, Sri Lanka, Thailand, Vietnam	Arrow 1931; Oppenheimer 1977; Biswas and Chatterjee 1985; Chandra 2000; Sewak 2006, 2009a, 2009b; Chandra and Ahirwar 2007; Jadhav and Sharma 2012; Chandra et al. 2012c; Chandra and Gupta 2012c, 2012d; Niino et al. 2014; Schoolmeesters 2019

No.	Species	Distribution		References
		India	Elsewhere	
124	*Onthophagus orissanus* Arrow, 1931	Bihar, Madhya Pradesh, Maharashtra, Odisha	No record found	Arrow 1931; Biswas and Chatterjee 1991; Chandra and Ahirwar 2007; Chandra and Gupta 2012c, 2012d; Gupta et al. 2014
125	*Onthophagus pacificus* Lansberge, 1885	Arunachal Pradesh, Assam, Karnataka, Kerala, Tamil Nadu, Uttarakhand, West Bengal	Bangladesh, China, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015; Schoolmeesters 2019
126	*Onthophagus palamuoi* Biswas & Chatterjee, 1986	Bihar, Jammu and Kashmir, Maharashtra, Tamil Nadu, Uttar Prrdesh, West Bengal	No record found	Biswas and Chatterjee 1986b
127	*Onthophagus* (*Colobonthophagus*) *paliceps* Arrow, 1931	Karnataka, Madhya Pradesh, Uttarakhand	Pakistan	Arrow 1931; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013; Siddiqui et al. 2014
128	*Onthophagus parafasciatus* Balthasar, 1974	Tamil Nadu	No record found	Bezděk and Hájek 2013
129	*Onthophagus* (*Colobonthophagus*) *pardalis* Boucomont, 1914	Karnataka, Maharashtra, Tamil Nadu	No record found	Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan 2013
130	*Onthophagus* (*Furconthophagus*) *parvulus* (Fabricius, 1798)	Karnataka, Maharashtra, Tamil Nadu	Pakistan, Sri Lanka	Arrow 1931; Chandra 2009; Karimbumkara and Priyadarsanan 2013; Schoolmeesters 2019
131	*Onthophagus pauliani* Balthasar, 1937	Meghalaya	No record found	Bezděk and Hájek 2013
132	*Onthophagus* (*Paraphanaeomorphus*) *phanaeiformis* Boucomont, 1914	Arunachal Pradesh	Myanmar; Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006
133	*Onthophagus pithankithae* Karimbumkara & Priyadarsanan, 2016	Karnataka, Kerala,	No record found	Karimbumkara and Priyadarsanan 2016
134	*Onthophagus planifrons* Frey, 1962	Arunachal Pradesh, Assam	No record found	Frey 1962
135	*Onthophagus politus* (Fabricius, 1798)	Arunachal Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Rajasthan, Tamil Nadu, Uttar Pradesh	Sri Lanka	Arrow 1931; Sewak 2006, 2009a, 2009b; Karimbumkara and Priyadarsanan 2013
136	*Onthophagus pollicatus* Harold, 1879	Assam	Bangladesh, Myanmar	Arrow 1931; Schoolmeesters 2019
137	*Onthophagus* (*Onthophagus porcus*) Arrow, 1931	Arunachal Pradesh, Karnataka	Bangladesh	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006; Karimbumkara and Priyadarsanan 2013
138	*Onthophagus* (*Sinonthophagus*) *productus* Arrow, 1907	Gujarat, Himachal Pradesh, Rajasthan, Sikkim, Uttarakhand, West Bengal	China	Arrow 1931; Chandra 2005; Sewak 2009a; Chandra and Gupta 2012a; Chandra et al. 2012c
139	*Onthophagus pusillus* (Fabricius, 1798)	Karnataka	Sri Lanka	Arrow 1931; Karimbumkara and Priyadarsanan 2013
140	*Onthophagus pygmaeus* (Schaller, 1783)	Karnataka, Kerala	Sri Lanka	Arrow 1931; Karimbumkara and Priyadarsanan 2013, 2016
141	*Onthophagus* (*Colobonthophagus*) *quadridentatus* (Fabricius, 1798)	Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal	Pakistan, Sri Lanka, Taiwan	Arrow 1931; Biswas and Chatterjee 1986a, 1991; Chandra 2000, 2005; Chandra and Ahirwar 2005a, 2007; Chandra and Gupta 2011a, 2012c, 2012d, 2012e, 2013; Chandra et al. 2012b, 2012c; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014; Siddiqui et al. 2014; Gajendra and Prasad 2016; Anto and Vinod 2017
142	*Onthophagus* (*Colobonthophagus*) *ramosellus* Bates, 1891	Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Punjab, Rajasthan, Tripura, Uttarakhand, Uttar Pradesh, West Bengal	Afghanistan, Myanmar, Nepal, Pakistan	Arrow 1931; Biswas and Chatterjee 1985, 1986a; Chandra 2000, 2005; Chatterjee and Biswas 2000; Chandra and Singh 2004; Sewak 2006; Chandra and Ahirwar 2007; Jadhav and Sharma 2012; Chandra and Gupta 2012a, 2012c, 2012d; Chandra et al. 2012a, 2012c; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014; Gajendra and Prasad 2016; Singh et al. 2017
143	*Onthophagus* (*Colobonthophagus*) *ramosus* (Wiedemann, 1823)	Bihar,Chhattisgarh, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh	Pakistan	Arrow 1931; Biswas and Chatterjee 1986a, 1986b; Biswas and Chatterjee 1991; Chandra 2000, 2005; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2009a, 2009b; Chandra and Gupta 2011a, 2012c, 2012d, 2013; Chandra et al. 2012a, 2012b, 2012c; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014; Gajendra and Prasad 2016;
144	*Onthophagus rana* Arrow, 1931	Gujarat, Karnataka, Kerala, Tamil Nadu	No record found	Arrow 1931; Chandra 2005; Sewak 2009a; Karimbumkara and Priyadarsanan 2013
145	*Onthophagus* (*Serrophorus*) *rectecornutus* Lansberge, 1883	Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Nagaland, Tamil Nadu, Tripura, Uttarakhand, West Bengal	Bangladesh, Bhutan, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam	Arrow 1931; Biswas and Chatterjee 1985, 1986a; Chatterjee and Biswas 2000; Sewak 2006; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013; Muhaimin et al. 2015; Sathiandran et al. 2015; Schoolmeesters 2019
146	*Onthophagus refulgens* Arrow, 1931	Kerala, Tamil Nadu	Sri Lanka	Arrow 1931; Sathiandran et al. 2015
147	*Onthophagus* (*Gibbonthophagus*) *remotus* Harold, 1879	Arunachal Pradesh	Myanmar	Biswas and Chatterjee 1985; Sewak 2006
148	*Onthophagus royi* Biswas & Chatterjee, 1985	Arunachal Pradesh	No record found	Biswas and Chatterjee 1985; Sewak 2006
149	*Onthophagus* (*Macronthophagus*) *rubricollis* Hope, 1831	Arunachal Pradesh, Himachal Pradesh, Meghalaya, Uttarakhand, Uttar Pradesh, West Bengal	Bhutan, China, Myanmar, Nepal	Arrow 1931; Biswas and Chatterjee 1985; Chandra 2005; Sewak 2005, 2006; Schoolmeesters 2019
150	*Onthophagus rubripennis* Arrow, 1907	Arunachal Pradesh, Assam, Sikkim, Meghalaya, West Bengal	Bhutan, Myanmar	Arrow 1931; Biswas and Chatterjee 1985
151	*Onthophagus* (*Sinonthophagus*) *rugulosus* Harold, 1886	Arunachal Pradesh, Assam, Meghalaya	China, Korea, Russia, Vietnam	Arrow 1931; Biswas and Chatterjee 1985; Sewak 2006
152	*Onthophagus* (*Serrophorus*) *sagittarius* (Fabricius, 1775)	Arunachal Pradesh, Chhattisgarh, Madhya Pradesh, Odisha, Rajasthan, Tripura, Uttarakhand, Uttar Pradesh, West Bengal	Australia, China, Indonesia, Malaysia, Myanmar, Nepal, United States of America	Arrow 1931; Biswas and Chatterjee 1986a, 1986b, 1991; Chatterjee and Biswas 2000; Chandra 2000; Chandra and Ahirwar 2005a, 2005b, 2007; Sewak 2006, 2009b; Chandra and Gupta 2012c, 2012d, 2013; Gajendra and Prasad 2016

No.	Species	Distribution		References
		India	Elsewhere	
153	*Onthophagus sahai* Biswas, 1986	Kerala	No record found	Biswas and Chatterjee 1986b
154	*Onthophagus* (*Eremonthophagus*) *semicinctus* D'orbigny, 1897	Gujarat, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh	Pakistan	Arrow 1931; Sewak 2009a, 2009b, 2010; Karimbumkara and Priyadarsanan 2013
155	*Onthophagus* (*Serrophorus*) *seniculus* (Fabricius, 1781	Arunachal Pradesh, Gujarat, Rajasthan, Uttar Pradesh	Myanmar, China, Thailand, Vietnam	Arrow 1931; Sewak 1986, 1991, 2006, 2009a, 2009b, 2010; Schoolmeesters 2019
156	*Onthophagus* (*Colobonthophagus*) *shillongensis* Scheuern, 1995	Assam, Karnataka	No record found	Scheuern 1995
157	*Onthophagus sikkimensis* Gillet, 1925	Sikkim, West Bengal	Bangladesh	Arrow 1931; Schoolmeesters 2019
158	*Onthophagus* (*Onthophagus*) *socialis* Arrow, 1931	Maharashtra, Karnataka,Tamil Nadu	No record found	Arrow 1931; Chandra 2005; Karimbumkara and Priyadarsanan 2013;
159	*Onthophagus songsokensis* Biswas & Chatterjee, 1985	Arunachal Pradesh	No record found	Biswas and Chatterjee 1985; Sewak 2006
160	*Onthophagus spinifex* (Fabricius, 1781)	Bihar,Chandigarh, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal	Bangladesh, Nepal, Pakistan, Sri Lanka	Arrow 1931; Biswas and Chatterjee 1986a, 1986b; Chatterjee and Biswas 2000; Chandra 2005; Chandra and Gupta 2011b; Jadhav and Sharma 2012; Chandra and Gupta 2012b, 2012d, 2013; Chandra et al. 2012c; Karimbumkara and Priyadarsanan 2013; Gupta et al. 2014; Gajendra and Prasad 2016
161	*Onthophagus sternalis* Arrow, 1931	Bihar, Gujarat, Haryana, Kerala, Madhya Pradesh, Maharashtra, Uttarakhand, Uttar Pradesh, West Bengal	Bangladesh, Nepal	Arrow 1931; Chandra et al. 2012c; Chandra and Gupta 2012e; Schoolmeesters 2019
162	*Onthophagus* (*Strandius*) *subansiriensis* Biswas, 1979	Arunachal Pradesh	No record found	Biswas 1979
163	*Onthophagus suillus* Arrow, 1931	Karnataka	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013
164	*Onthophogus* (*Palaeonthophagus*) *sutleinensis* Splichal, 1910	Himachal Pradesh, Kashmir, Punjab	Afghanistan, China, Pakistan	Arrow 1931; Chandra 2009; Sewak 2005
165	*Onthophagus* (*Trichonthophagus*) *tarandus* (Fabricius, 1792)	Bihar, Himachal Pradesh, Haryana, Karnataka, Madhya Pradesh, Maharasthra, Rajasthan, Tamil Nadu, Uttarakhand, West Bengal	No record found	Arrow 1931; Chandra 2000, 2009; Chandra and Ahirwar 2005a, 2005b; Chandra and Ahirwar 2007; Sewak 2009b; Jadhav and Sharma 2012; Chandra et al. 2012c; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013
166	*Onthophagus* (*Gibbonthophagus*) *taurinus* White, 1844	Tipura	Bangladesh, China, Myanmar, Thailand, Vietnam	Biswas and Chatterjee 1986b; Chatterjee and Biswas 2000; Schoolmeesters 2019
167	*Onthophagus tharalithae* Karimbumkara & Priyadarsanan, 2016	Assam, Kerala	No record found	Karimbumkara and Priyadarsanan 2016
168	*Onthophagus* (*Altonthophagus*) *tibetanus* Arrow, 1907	Arunachal Pradesh, Kashmir, Uttarakhand	China	Arrow 1931; Sewak 2006; Chandra et al. 2012a, 2012c
169	*Onthophagus tirapensis* Biswas & Chatterjee, 1985	Arunachal Pradesh	No record found	Biswas and Chatterjee 1985; Sewak 2006
170	*Onthophagus tnai* Nithya & Sabu, 2012	Kerala	No record found	Nithya and Thomas 2012
171	*Onthophagus* (*Colobonthophagus*) *tragus* (Fabricius, 1792)	Madhya Pradesh, Maharasthra, Gujarat, Himachal Pradesh, Karnataka, Odisha, Rajasthan, Uttarakhand, Uttar Pradesh, West Bengal	Bangladesh, China, Indonesia, Korea, Laos, Malaysia, Myanmar, Thailand, Vietnam	Arrow 1931; Sewak 1986, 2009b, 2010; Chandra 2005, 2009; Chandra and Ahirwar 2005b; Huijbregts and Krikken 2009; Chandra et al. 2012c; Chandra and Gupta 2012c; Karimbumkara and Priyadarsanan 2013; Sarkar et al. 2015; Schoolmeesters 2019
172	*Onthophagus* (*Eremonthophagus*) *transcaspicus* Koenig, 1889	Karnataka	Algeria, Arabia, Ethiopia, Iraq, Israel, Morocco, Pakistan, Somalia, Sudan, Tajikistan, Turkey, Turkmenistan, Uzbekistan	Arrow 1931; Karimbumkara and Priyadarsanan 2013; Schoolmeesters 2019
173	*Onthophagus* (*Colobonthophagus*) *transquadridentatus* Scheuern, 1995	Tamil Nadu	No record found	Scheuern 1995; Chandra 2009
174	*Onthophagus* (*Colobonthophagus*) *triceratops* Arrow, 1913	Arunachal Pradesh, Assam, Gujarat, Karnataka, Rajasthan, Tripura, West Bengal	No record found	Arrow 1931; Biswas and Chatterjee 1985, 1986a; Chatterjee and Biswas 2000; Sewak 2006, 2009a; Karimbumkara and Priyadarsanan 2013; Sarkar et al. 2015
175	*Onthophagus tritinctus* Boucomont, 1914	Karnataka, Kerala, Maharashtra, Nagpur, Odisha, Tamil Nadu	China, Sri Lanka	Arrow 1931; Biswas and Chatterjee 1991; Karimbumkara and Priyadarsanan 2013, 2016; Sathiandran et al. 2015
176	*Onthophagus troglodyta* (Wiedemann, 1823)	Haryana, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh	Afghanistan, Pakistan	Arrow 1931; Sewak 2009b, 2010; Chandra et al. 2012c; AnithaRani and Sanjayan 2013
177	*Onthophagus* (*Matashia*) *troniceki* Balthasar, 1933	Odisha	No record found	Bezděk and Hájek 2013
178	*Onthophagus truncaticornis* (Schaller, 1783)	Madhya Pradesh, Maharasthra, Karnataka, Tamil Nadu	No record found	Arrow 1931;Chandra2009; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013
179	*Onthophagus* (*Indonthophagus*) *turbatus* Walker, 1858	Karnataka, Kerala, Maharashtra, Odisha, Puducherry, Tamil Nadu	China, Myanmar, Sri Lanka, Thailand, Vietnam	Arrow 1931; AnithaRani and Sanjayan 2013; Karimbumkara and Priyadarsanan 2013; Sathiandran et al. 2015; Schoolmeesters 2019
180	*Onthophagus unifasciatus* (Schaller, 1783)	Andhra Pradesh, Bihar, Chhattisgarh, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal	Bangladesh, Sri Lanka	Arrow 1931; Oppenheimer 1977; Biswas and Chatterjee 1986b; Chandra 2009; Jadhav and Sharma 2012; Chandra et al. 2012b, 2012c; Chandra and Gupta 2012c, 2012d, 2013; Karimbumkara and Priyadarsanan 2013; Gajendra and Prasad 2016; Kalawate 2018

No.	Species	Distribution		References
		India	Elsewhere	
181	*Onthophagus* (*Colobonthophagus*) *urellus* Boucomont, 1919	Tamil Nadu, Kerala	Myanmar	Arrow 1931; Chandra 2009
182	*Onthophagus* (*Colobonthophagus*) *usurpator* Balthasar, 1959	Karnataka, Kerala	No record found	Karimbumkara and Priyadarsanan 2013
183	*Onthophagus variegatus* (Fabricius, 1798)	Arunachal Pradesh, Gujarat, Haryana, Punjab, Rajasthan	Afghanistan, Iran, Iraq, Kenya, Namibia, Pakistan, Soudi Arabia, Tanzania, Zimbabwe	Arrow 1931; Sewak 2006, 2009a, 2009b; Ali et al. 2015; Schoolmeesters 2019
184	*Onthophagus* (*Paraphanaeomorphus*) *vaulogeri* Boucomont, 1923	Arunachal Pradesh, Assam, Uttarakhand, Meghalaya	China, Laos, Myanmar; Thailand; Vietnam	Biswas and Chatterjee 1985; Sewak 2006
185	*Onthophagus* (*Micronthophagus*) *vigilans* Boucomont, 1921	Bihar, Odisha, Rajasthan,	China, Laos, Vietnam,	Arrow 1931; Sewak 2009a, 2009b; Schoolmeesters 2019
186	*Onthophagus violaceotinctus* Gillet, 1925	Andhra Pradesh, Gujarat, Tamil Nadu	No record found	Arrow 1931; Sewak 2009a
187	*Onthophagus vladimiri* Frey, 1957	Kerala, Tamil Nadu	No record found	Biswas and Chatterjee 1986b; Chandra and Gupta 2012a; Sathiandran et al. 2015; Schoolmeesters 2019
188	*Onthophagus vulpinus* Arrow, 1931	Assam	Myanmar, Thailand	Arrow 1931; Schoolmeesters 2019
189	*Onthophagus vultur* Arrow, 1931	Andhra Pradesh, Maharashtra, Karnataka	No record found	Arrow 1931; Karimbumkara and Priyadarsanan 2013, 2016
190	*Onthophagus* (*Onthophagus*) *zebra* Arrow, 1931	Madhya Pradesh, Maharashtra, Karnataka	No record found	Arrow 1931; Chandra 2000; Chandra and Ahirwar 2007; Jadhav and Sharma 2012; Chandra and Gupta 2012c, 2012d; Karimbumkara and Priyadarsanan 2013